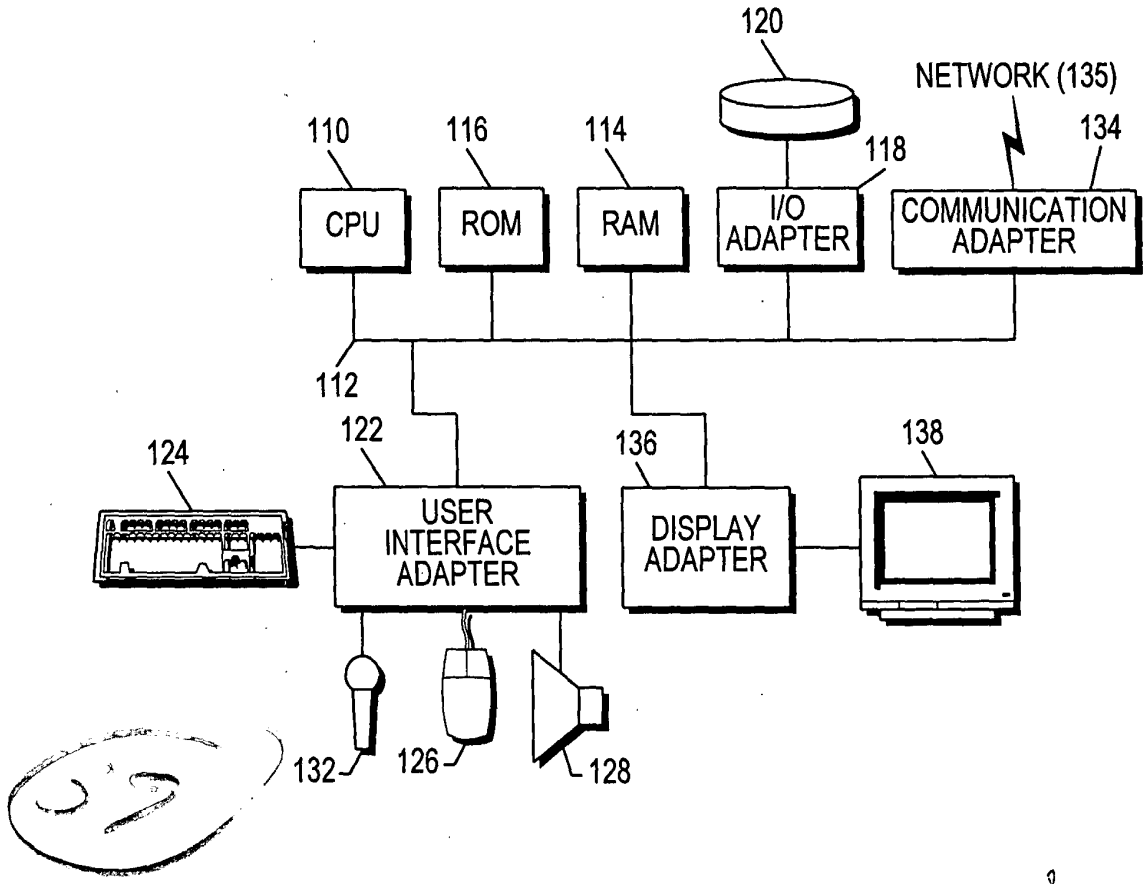


Figure 1

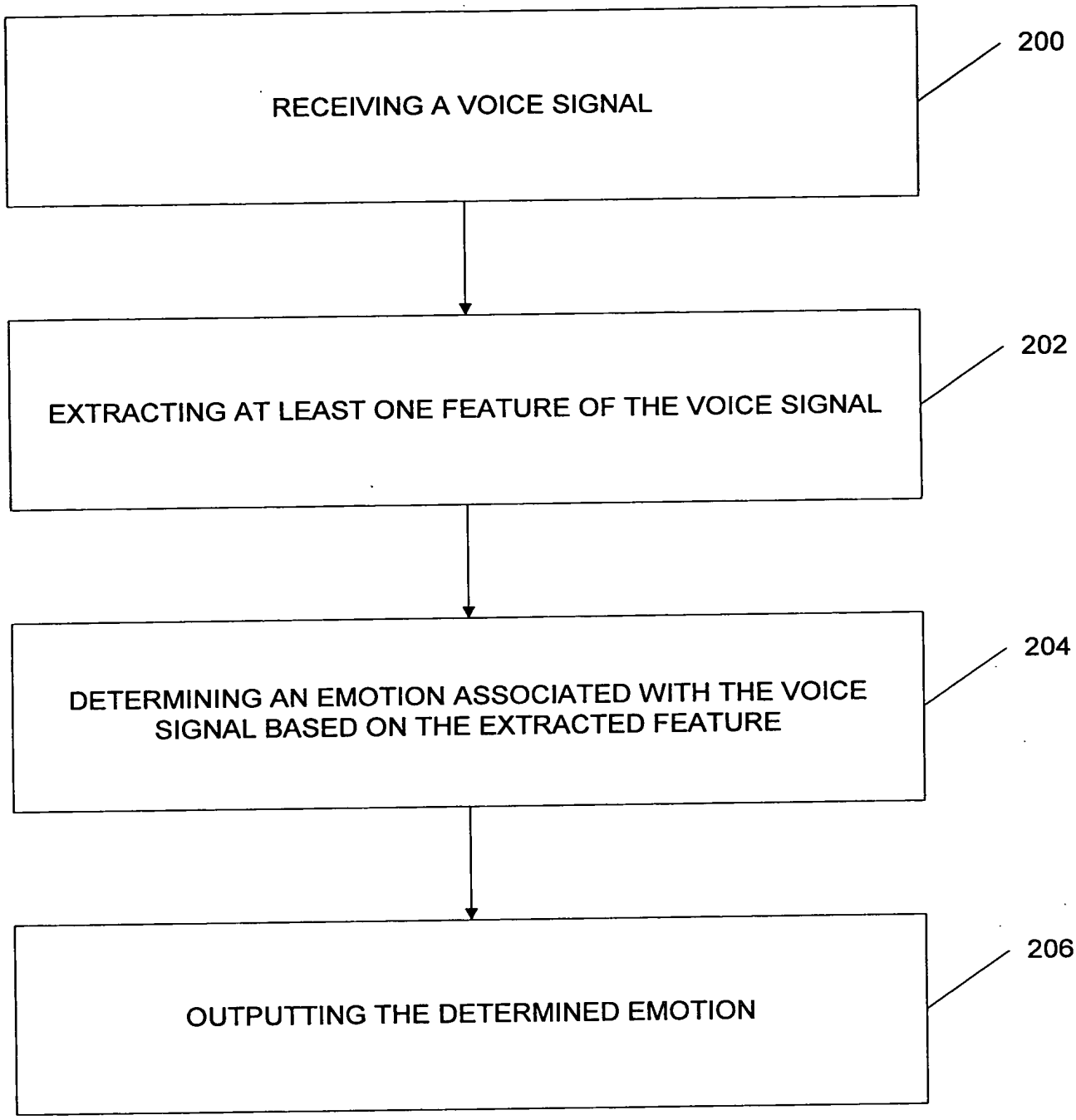

RECEIVING A VOICE SIGNAL
200
EXTRACTING AT LEAST ONE FEATURE OF THE VOICE SIGNAL
202
DETERMINING AN EMOTION ASSOCIATED WITH THE VOICE SIGNAL BASED ON THE EXTRACTED FEATURE
204
OUTPUTTING THE DETERMINED EMOTION
206

Figure 2

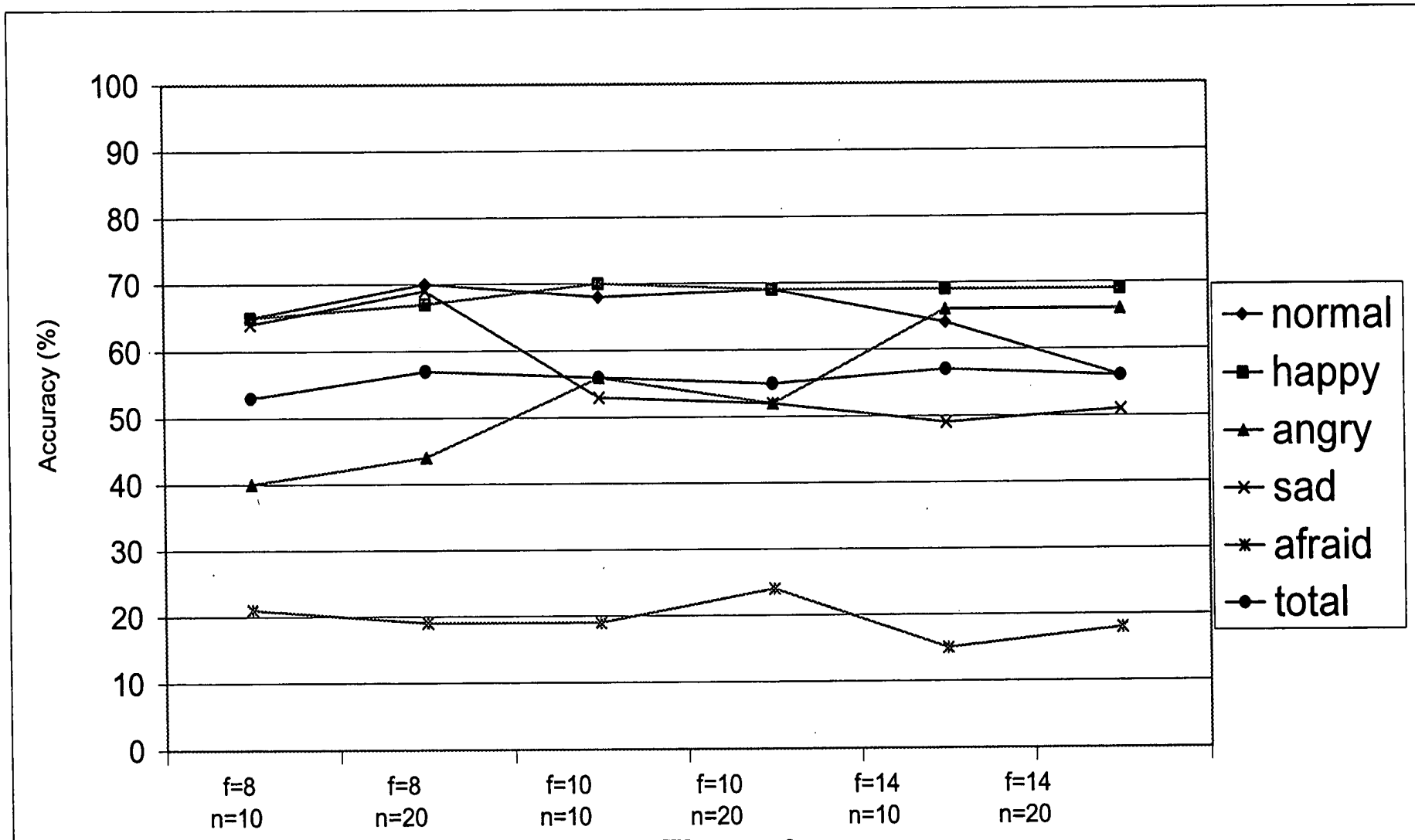


Figure 3

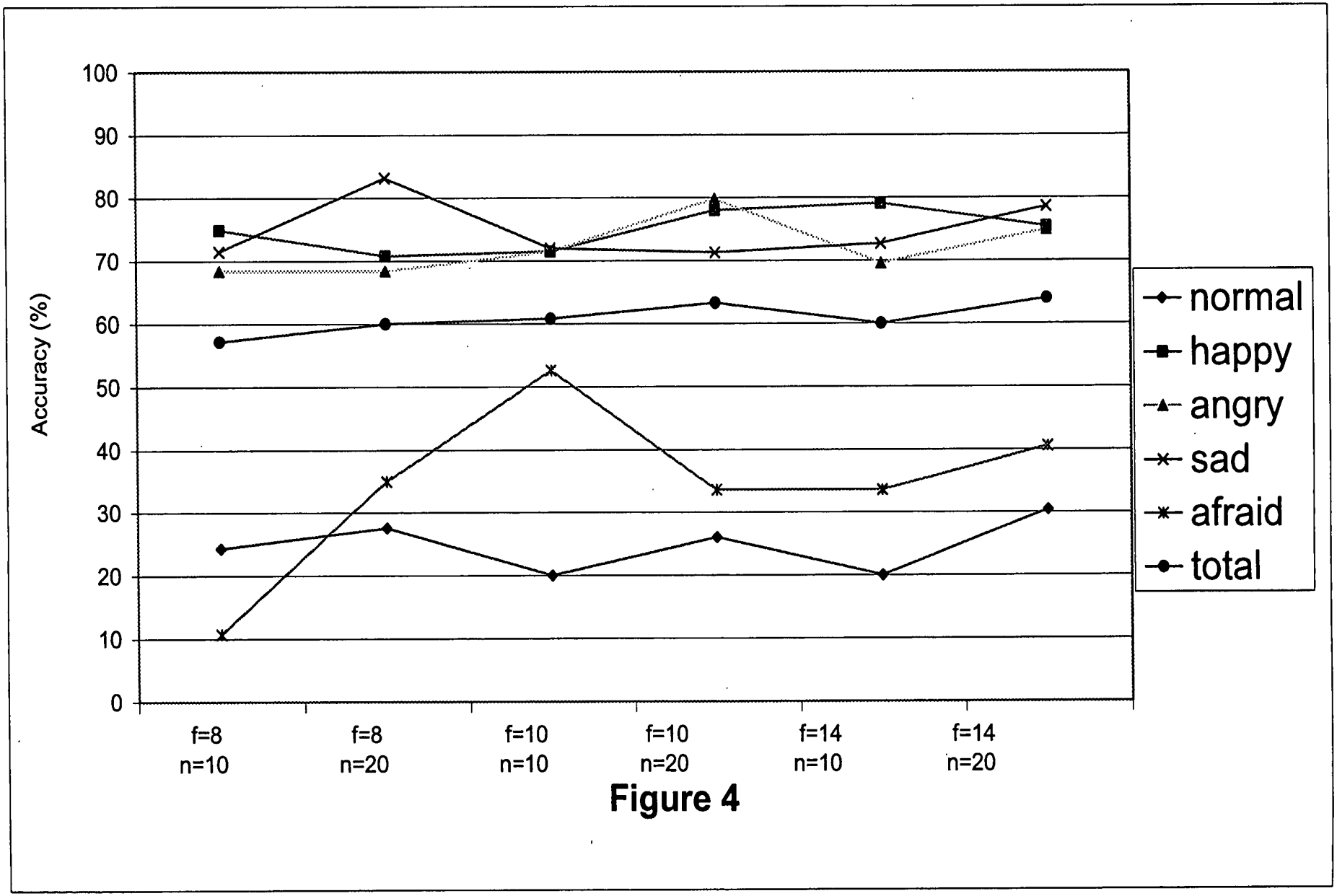


Figure 4

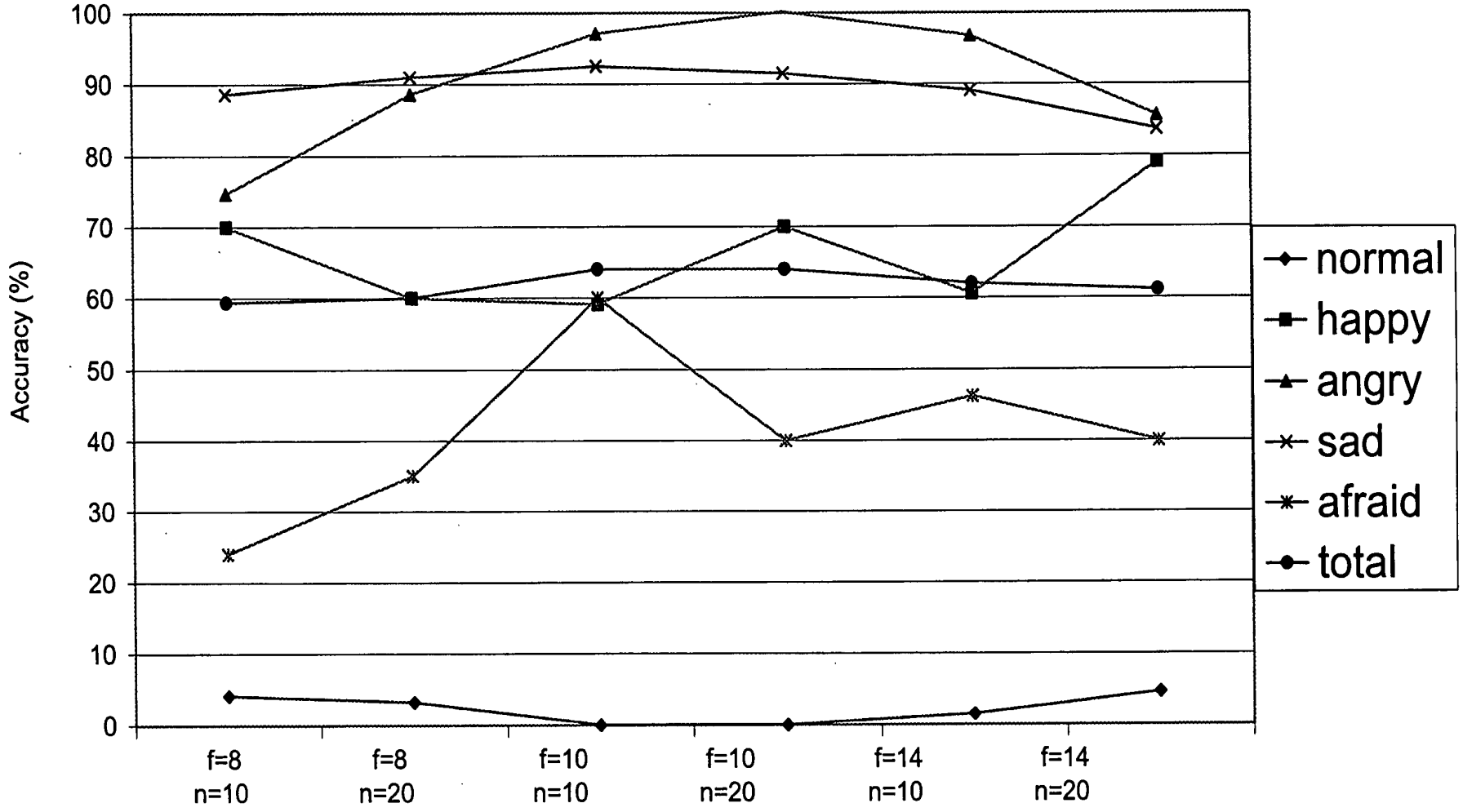


Figure 5

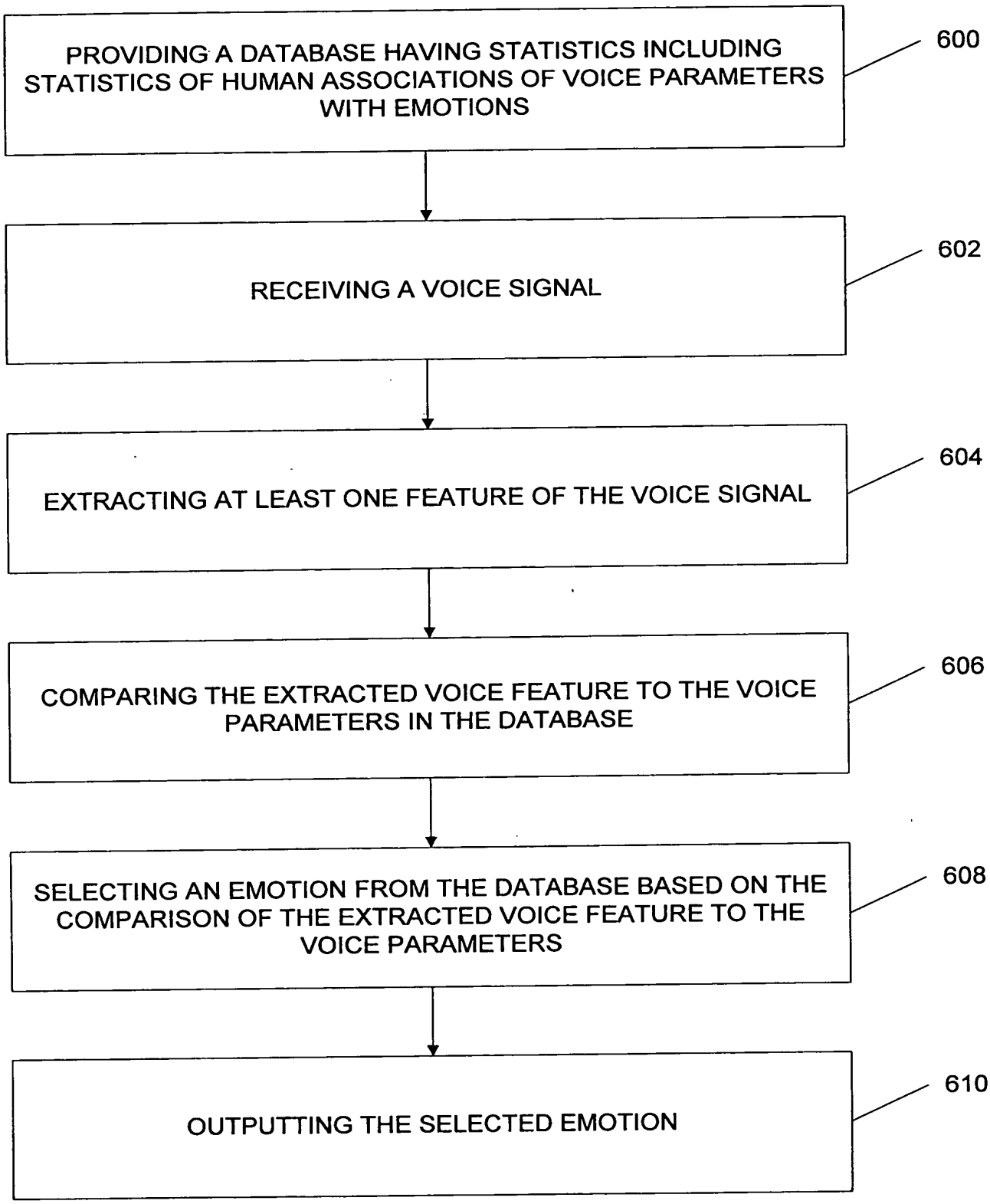

PROVIDING A DATABASE HAVING STATISTICS INCLUDING STATISTICS OF HUMAN ASSOCIATIONS OF VOICE PARAMETERS WITH EMOTIONS
600
RECEIVING A VOICE SIGNAL
602
EXTRACTING AT LEAST ONE FEATURE OF THE VOICE SIGNAL
604
COMPARING THE EXTRACTED VOICE FEATURE TO THE VOICE PARAMETERS IN THE DATABASE
606
SELECTING AN EMOTION FROM THE DATABASE BASED ON THE COMPARISON OF THE EXTRACTED VOICE FEATURE TO THE VOICE PARAMETERS
608
OUTPUTTING THE SELECTED EMOTION
610

Figure 6

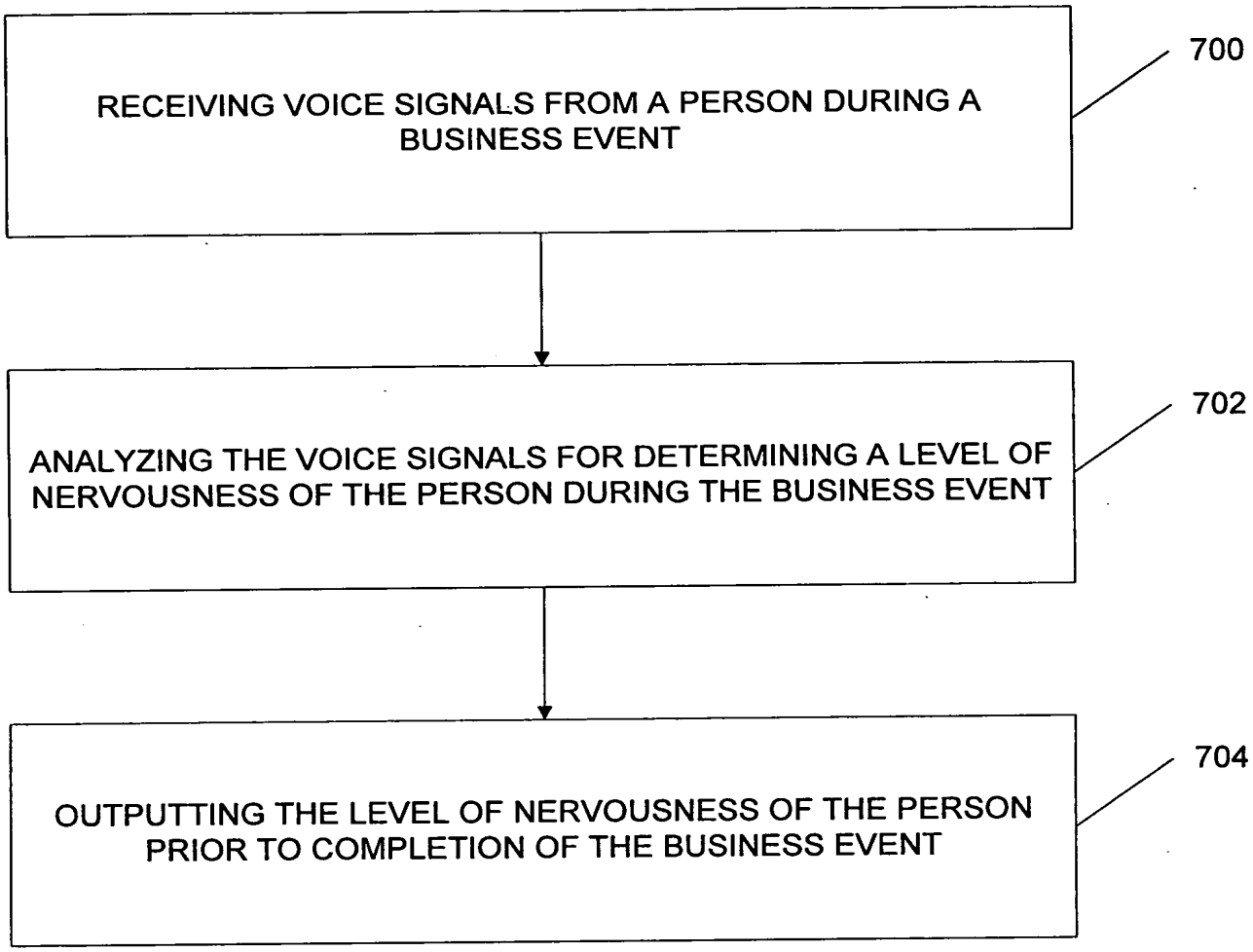

RECEIVING VOICE SIGNALS FROM A PERSON DURING A BUSINESS EVENT
700
ANALYZING THE VOICE SIGNALS FOR DETERMINING A LEVEL OF NERVOUSNESS OF THE PERSON DURING THE BUSINESS EVENT
702
OUTPUTTING THE LEVEL OF NERVOUSNESS OF THE PERSON PRIOR TO COMPLETION OF THE BUSINESS EVENT
704

Figure 7

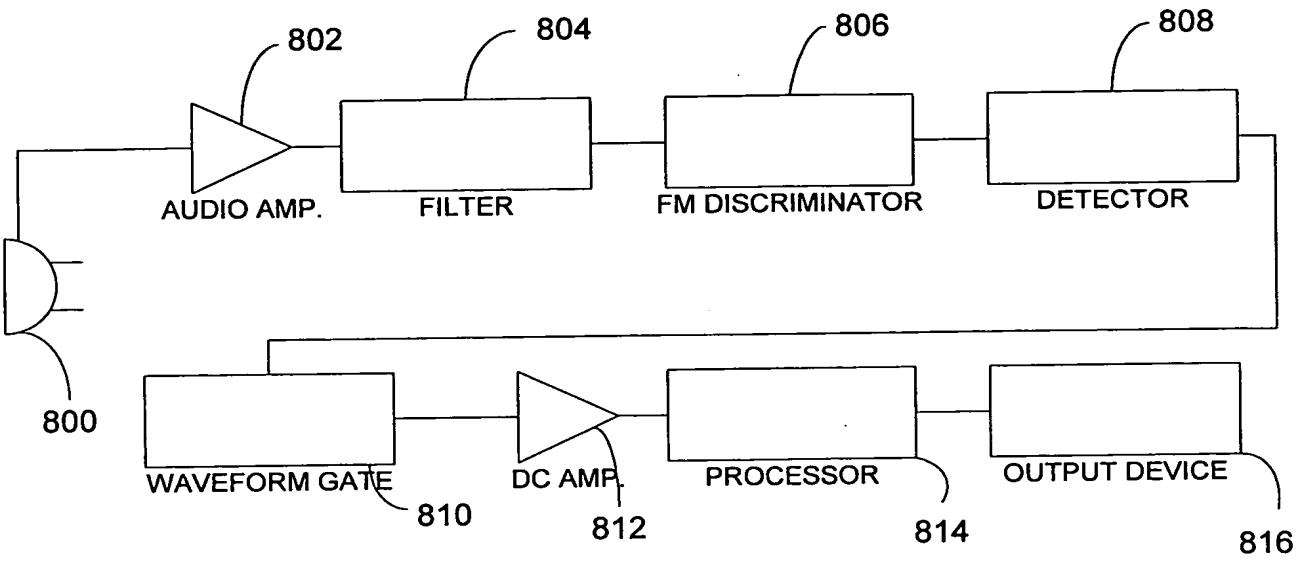


Figure 8

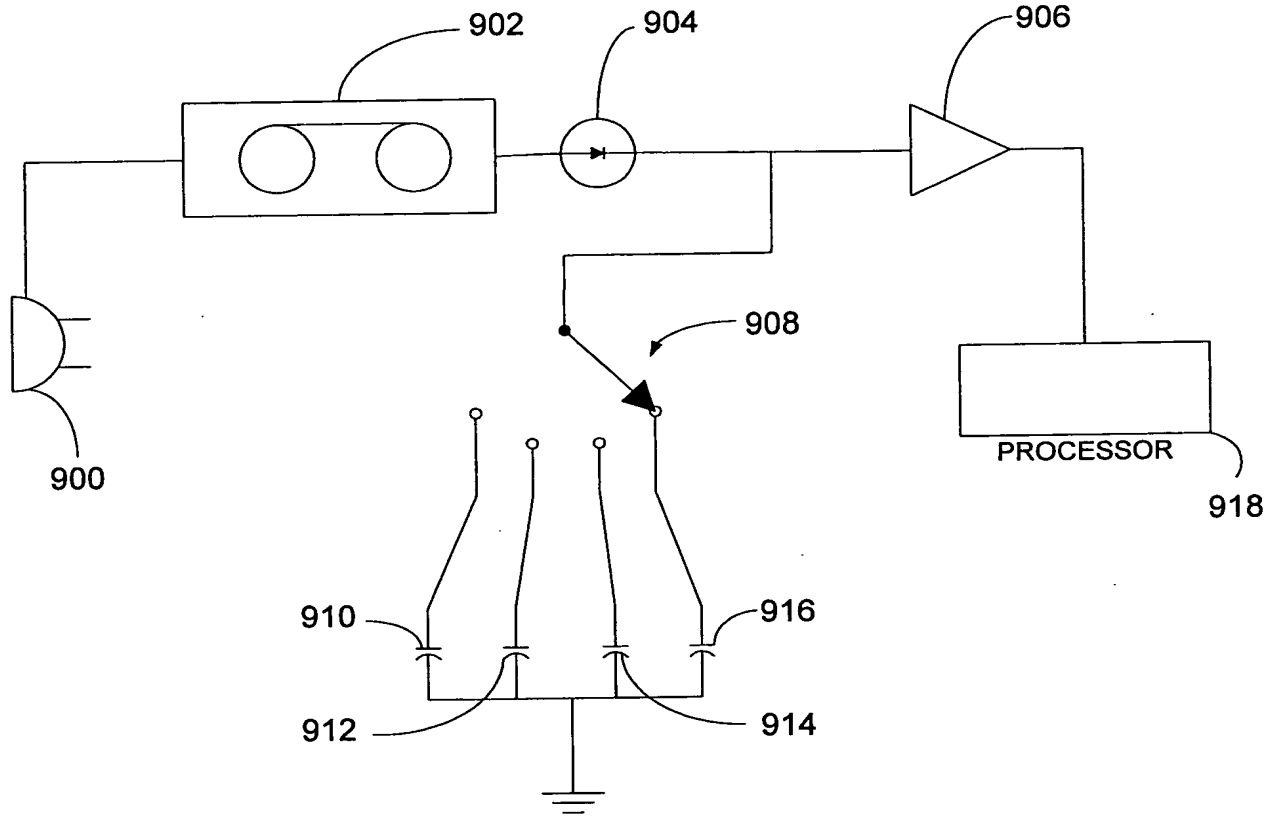


Figure 9

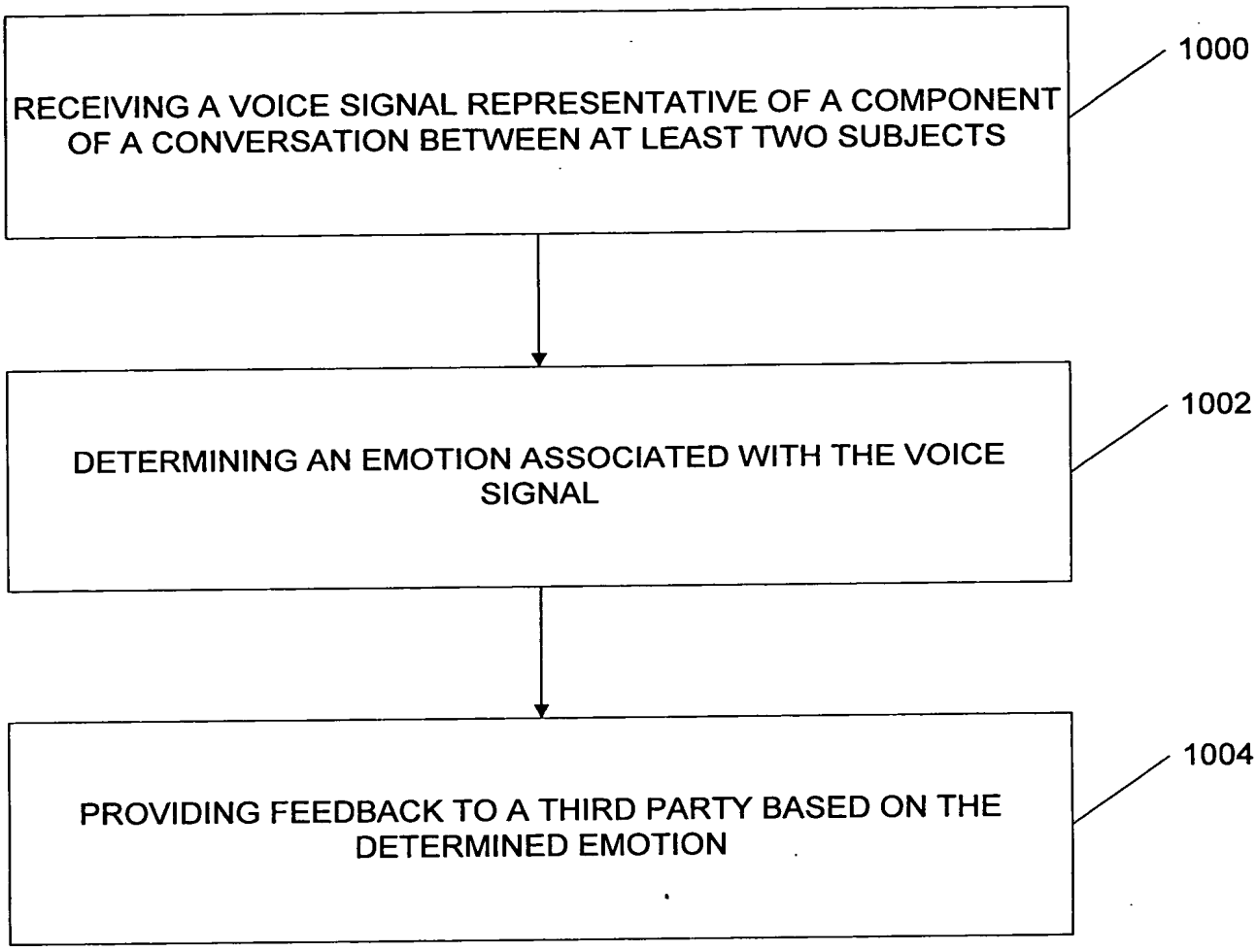

RECEIVING A VOICE SIGNAL REPRESENTATIVE OF A COMPONENT OF A CONVERSATION BETWEEN AT LEAST TWO SUBJECTS
1000
DETERMINING AN EMOTION ASSOCIATED WITH THE VOICE SIGNAL
1002
PROVIDING FEEDBACK TO A THIRD PARTY BASED ON THE DETERMINED EMOTION
1004

Figure 10

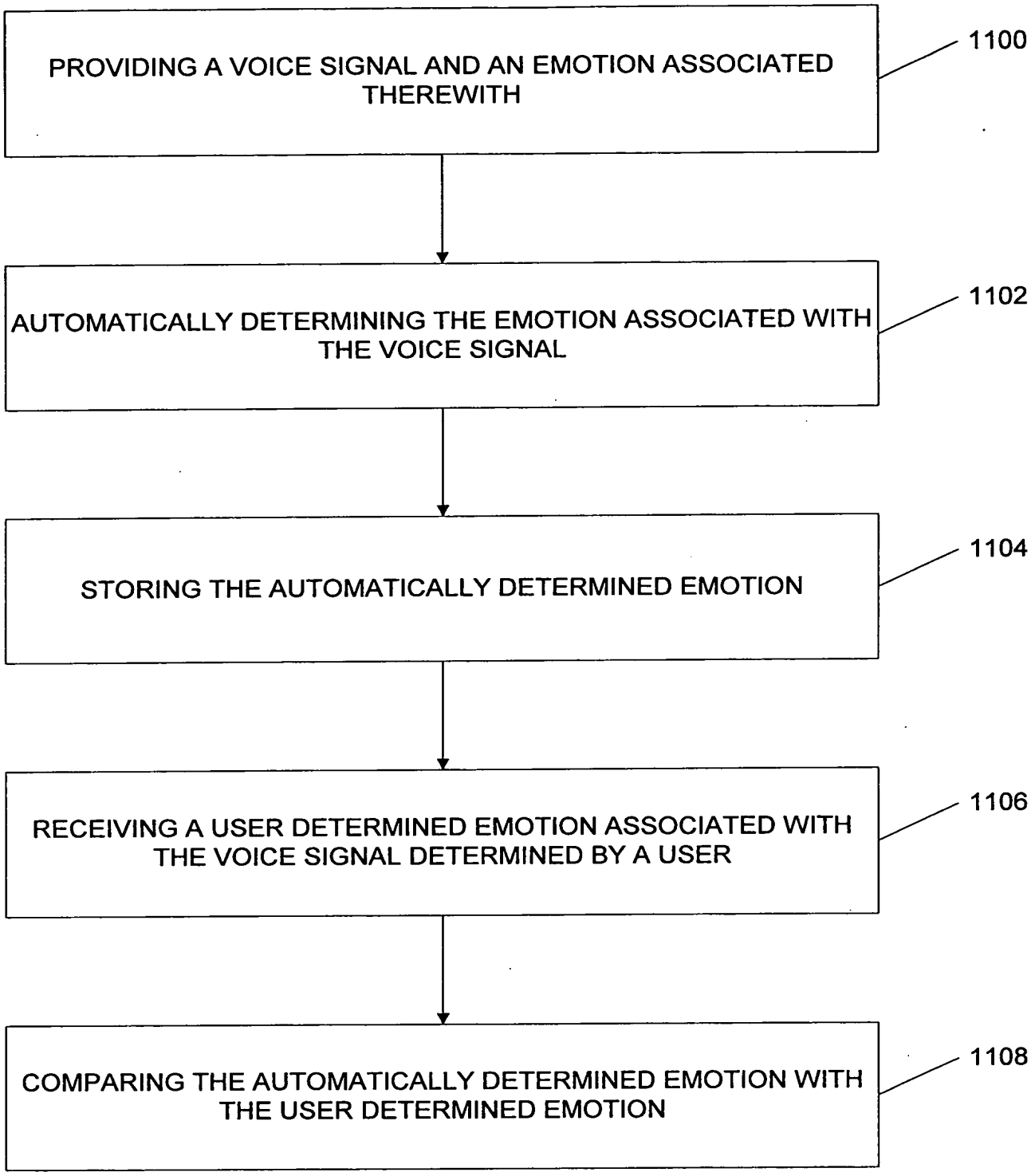

PROVIDING A VOICE SIGNAL AND AN EMOTION ASSOCIATED THEREWITH
1100
AUTOMATICALLY DETERMINING THE EMOTION ASSOCIATED WITH THE VOICE SIGNAL
1102
STORING THE AUTOMATICALLY DETERMINED EMOTION
1104
RECEIVING A USER DETERMINED EMOTION ASSOCIATED WITH THE VOICE SIGNAL DETERMINED BY A USER
1106
COMPARING THE AUTOMATICALLY DETERMINED EMOTION WITH THE USER DETERMINED EMOTION
1108

Figure 11

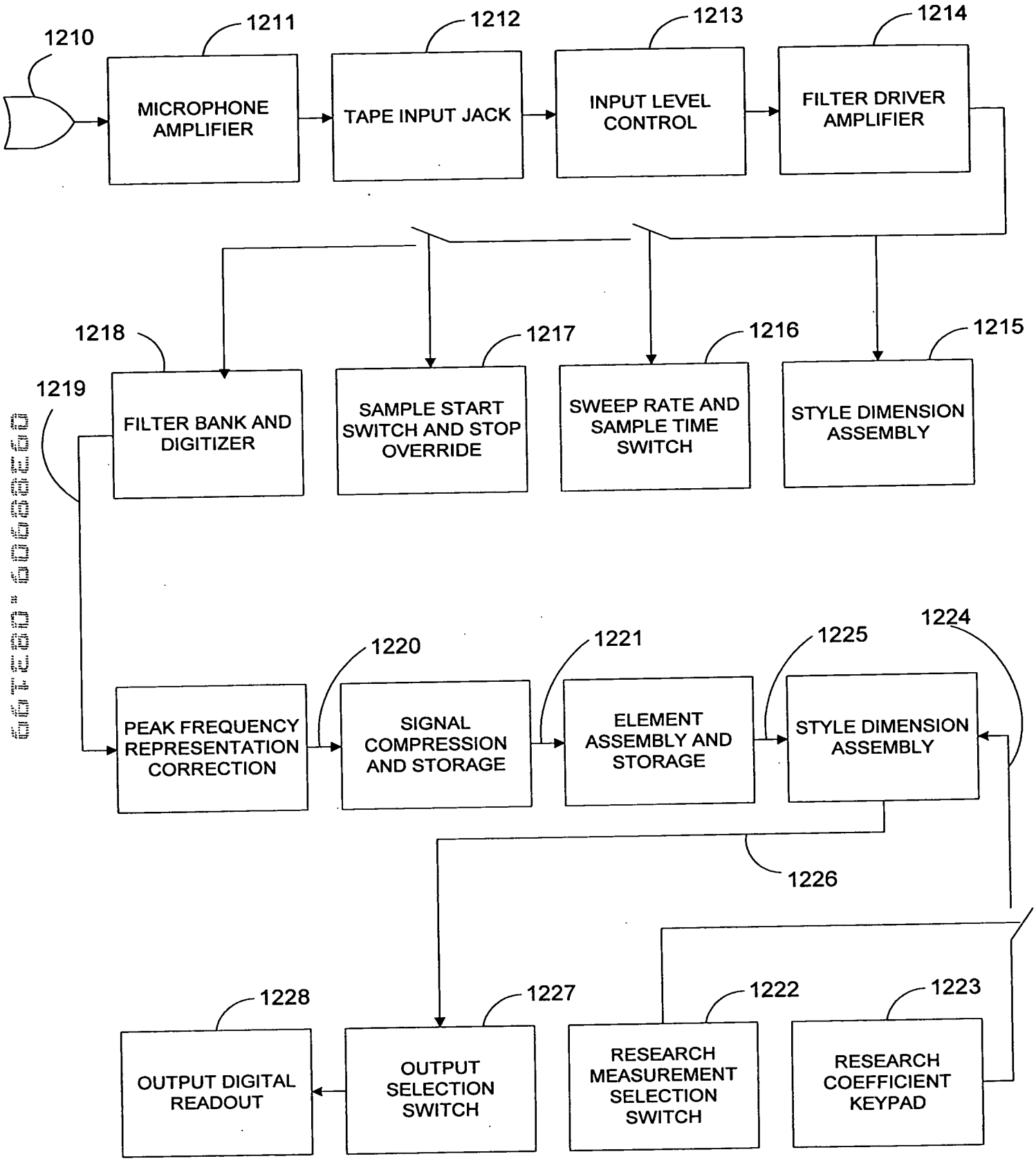

1210
1211
MICROPHONE AMPLIFIER
1212
TAPE INPUT JACK
1213
INPUT LEVEL CONTROL
1214
FILTER DRIVER AMPLIFIER
1218
1219
FILTER BANK AND DIGITIZER
1217
SAMPLE START SWITCH AND STOP OVERRIDE
1216
SWEEP RATE AND SAMPLE TIME SWITCH
1215
STYLE DIMENSION ASSEMBLY
1220
PEAK FREQUENCY REPRESENTATION CORRECTION
1221
SIGNAL COMPRESSION AND STORAGE
1225
ELEMENT ASSEMBLY AND STORAGE
1224
STYLE DIMENSION ASSEMBLY
1226
1228
OUTPUT DIGITAL READOUT
1227
OUTPUT SELECTION SWITCH
1222
RESEARCH MEASUREMENT SELECTION SWITCH
1223
RESEARCH COEFFICIENT KEYPAD

Figure 12

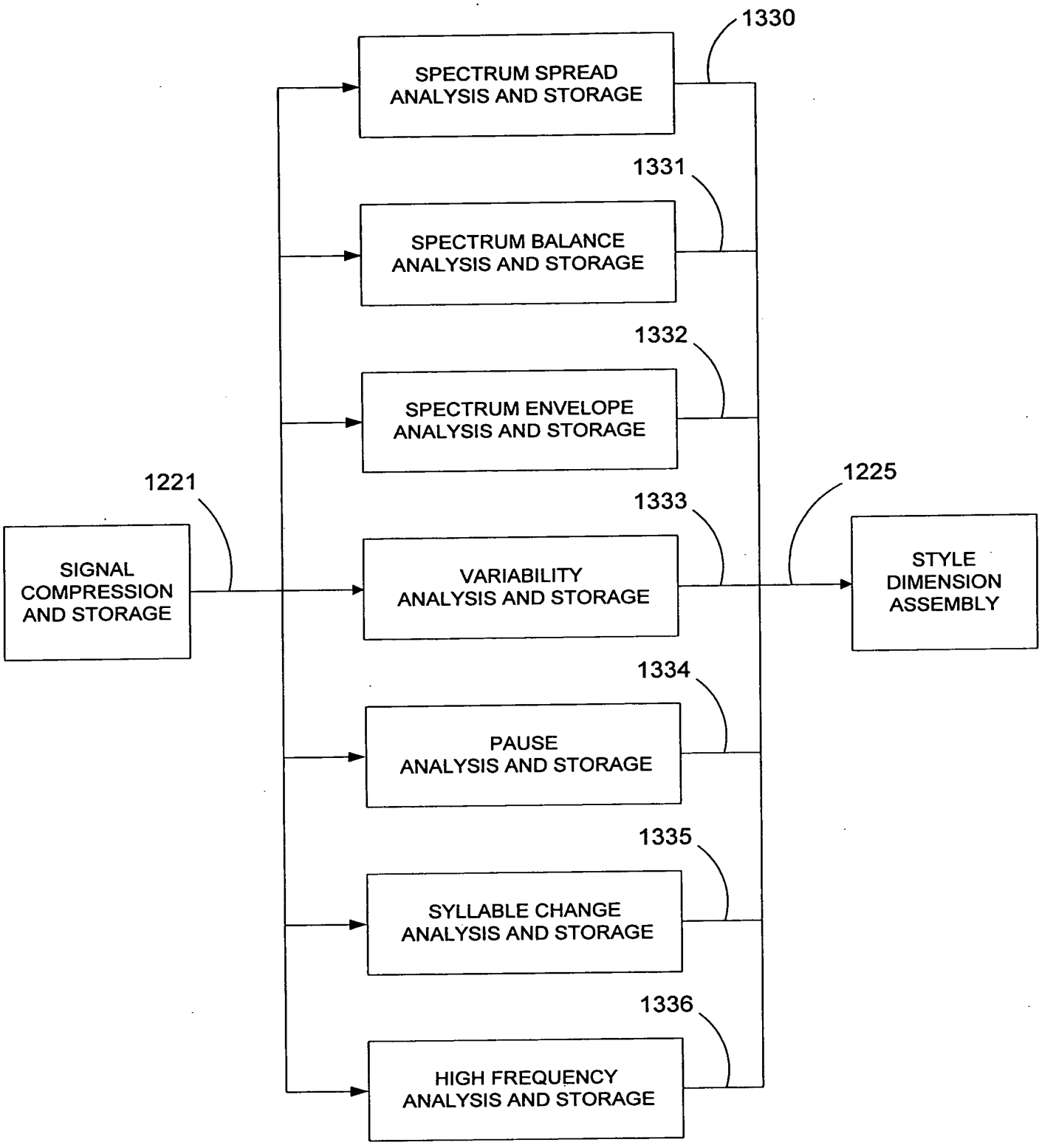

1330
SPECTRUM SPREAD ANALYSIS AND STORAGE
1331
SPECTRUM BALANCE ANALYSIS AND STORAGE
1332
SPECTRUM ENVELOPE ANALYSIS AND STORAGE
1221
SIGNAL COMPRESSION AND STORAGE
1333
VARIABILITY ANALYSIS AND STORAGE
1225
STYLE DIMENSION ASSEMBLY
1334
PAUSE ANALYSIS AND STORAGE
1335
SYLLABLE CHANGE ANALYSIS AND STORAGE
1336
HIGH FREQUENCY ANALYSIS AND STORAGE

Figure 13

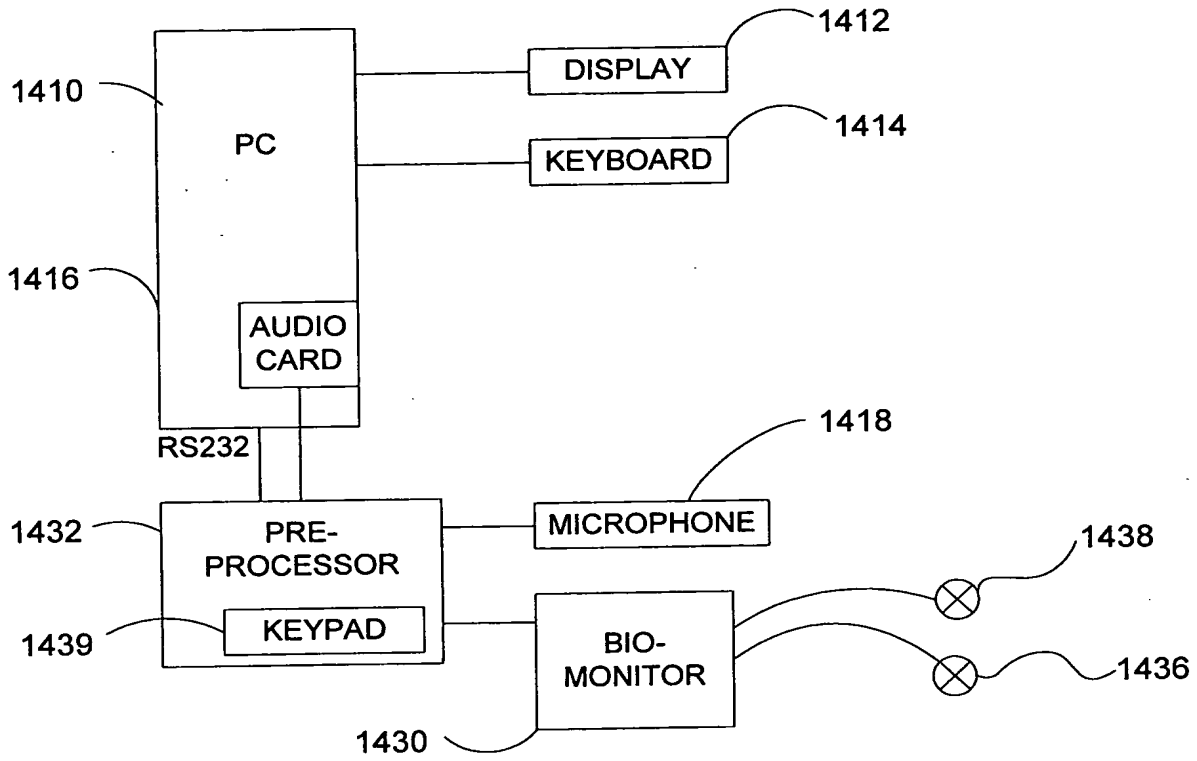


Figure 14

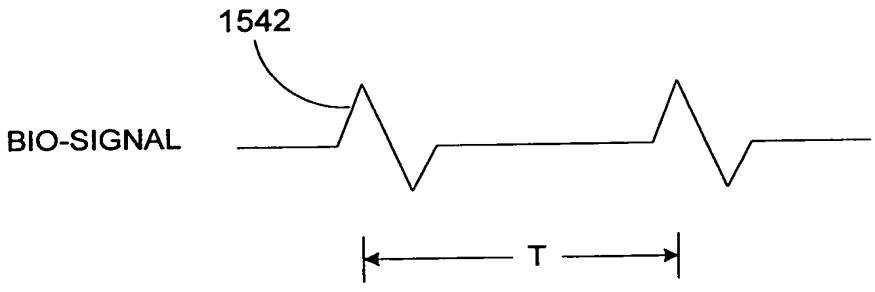


Figure 15

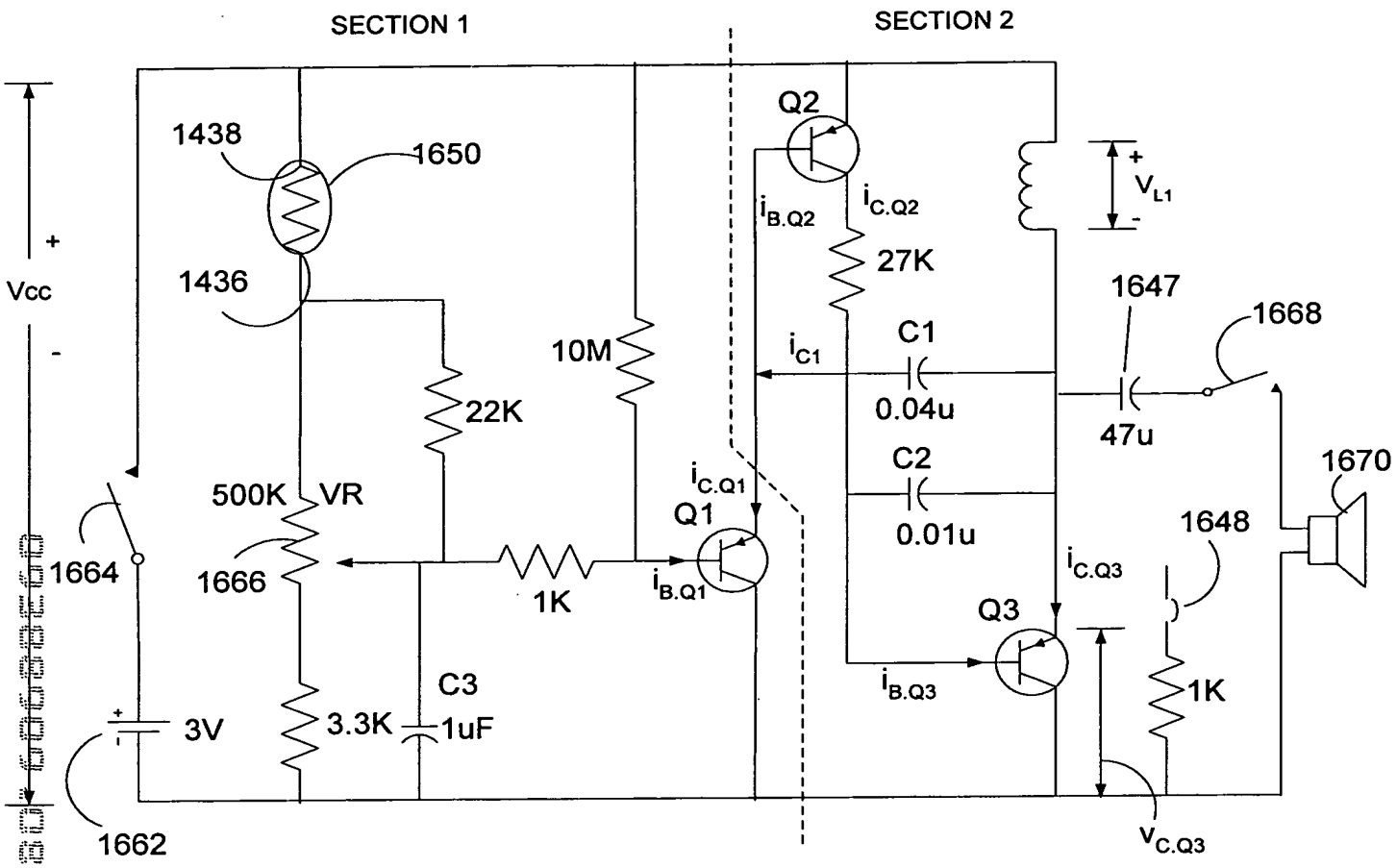


Figure 16

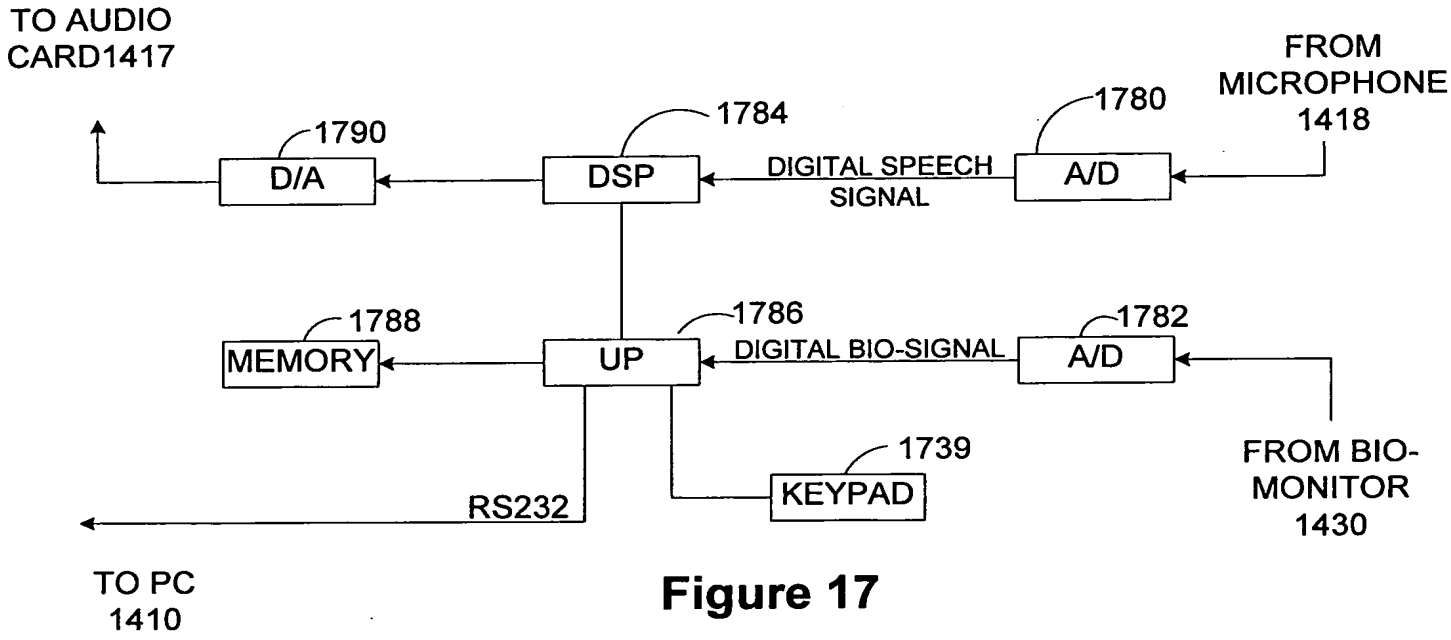
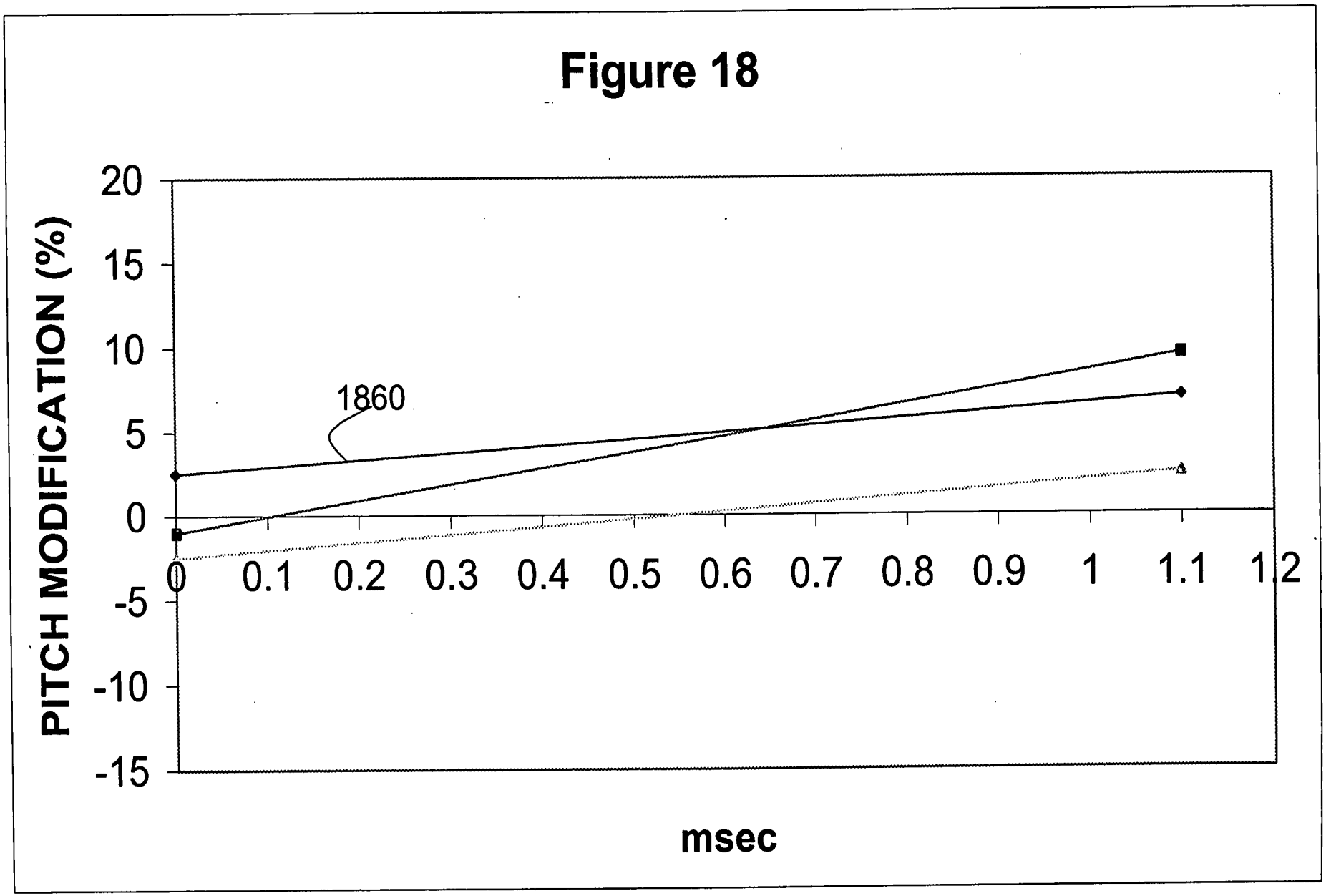


Figure 17

Figure 18



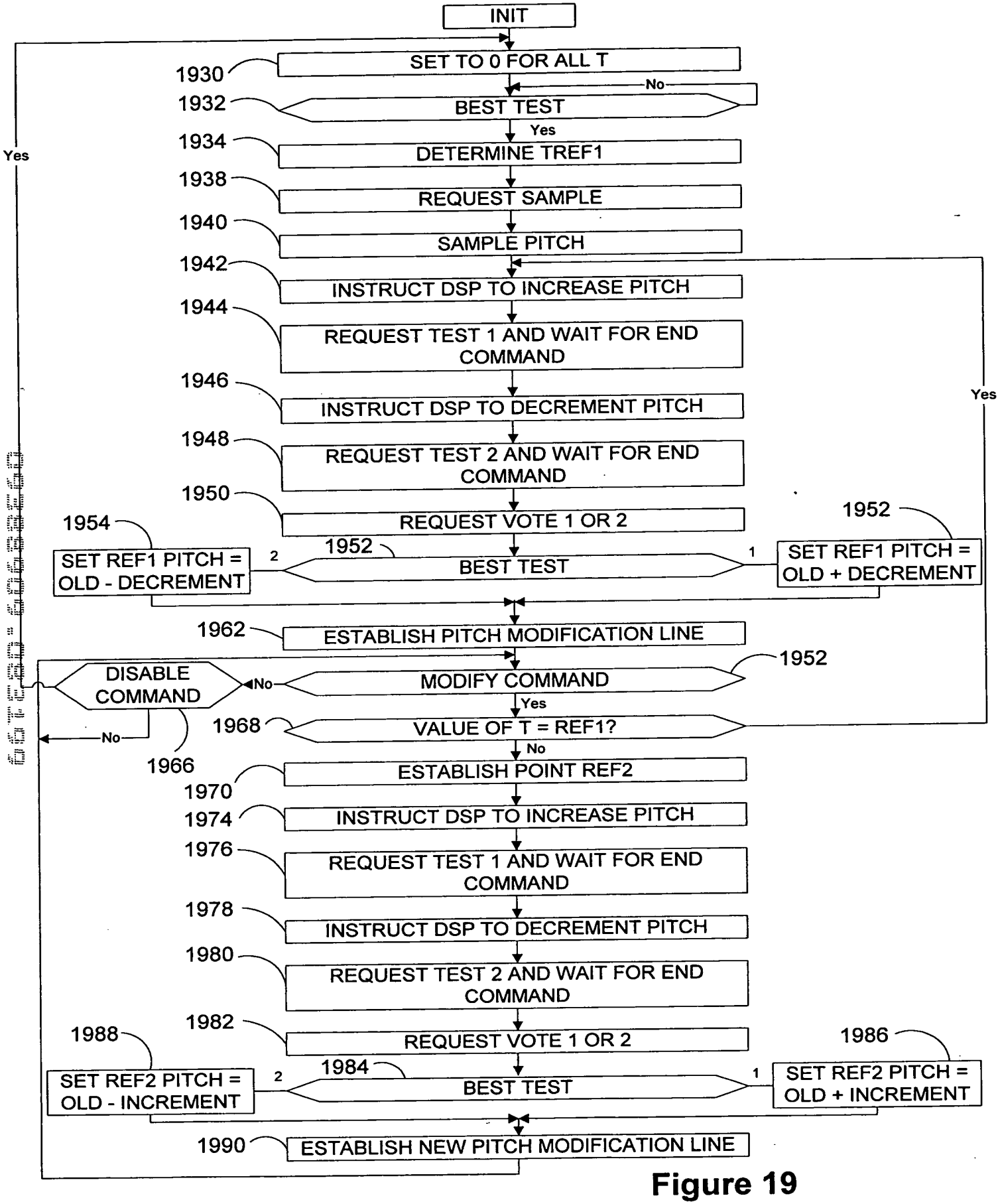

INIT
SET TO 0 FOR ALL T
1930
No
BEST TEST
1932
Yes
DETERMINE TREF1
1934
REQUEST SAMPLE
1938
SAMPLE PITCH
1940
INSTRUCT DSP TO INCREASE PITCH
1942
REQUEST TEST 1 AND WAIT FOR END COMMAND
1944
INSTRUCT DSP TO DECREMENT PITCH
1946
REQUEST TEST 2 AND WAIT FOR END COMMAND
1948
REQUEST VOTE 1 OR 2
1950
1952
BEST TEST
2
1
1954
SET REF1 PITCH = OLD - DECREMENT
SET REF1 PITCH = OLD + DECREMENT
1952
ESTABLISH PITCH MODIFICATION LINE
1962
DISABLE COMMAND
No
MODIFY COMMAND
1952
Yes
VALUE OF T = REF1?
1968
No
No
1966
ESTABLISH POINT REF2
1970
INSTRUCT DSP TO INCREASE PITCH
1974
REQUEST TEST 1 AND WAIT FOR END COMMAND
1976
INSTRUCT DSP TO DECREMENT PITCH
1978
REQUEST TEST 2 AND WAIT FOR END COMMAND
1980
REQUEST VOTE 1 OR 2
1982
1984
BEST TEST
2
1
1988
SET REF2 PITCH = OLD - INCREMENT
1986
SET REF2 PITCH = OLD + INCREMENT
ESTABLISH NEW PITCH MODIFICATION LINE
1990
Yes
Yes

Figure 19

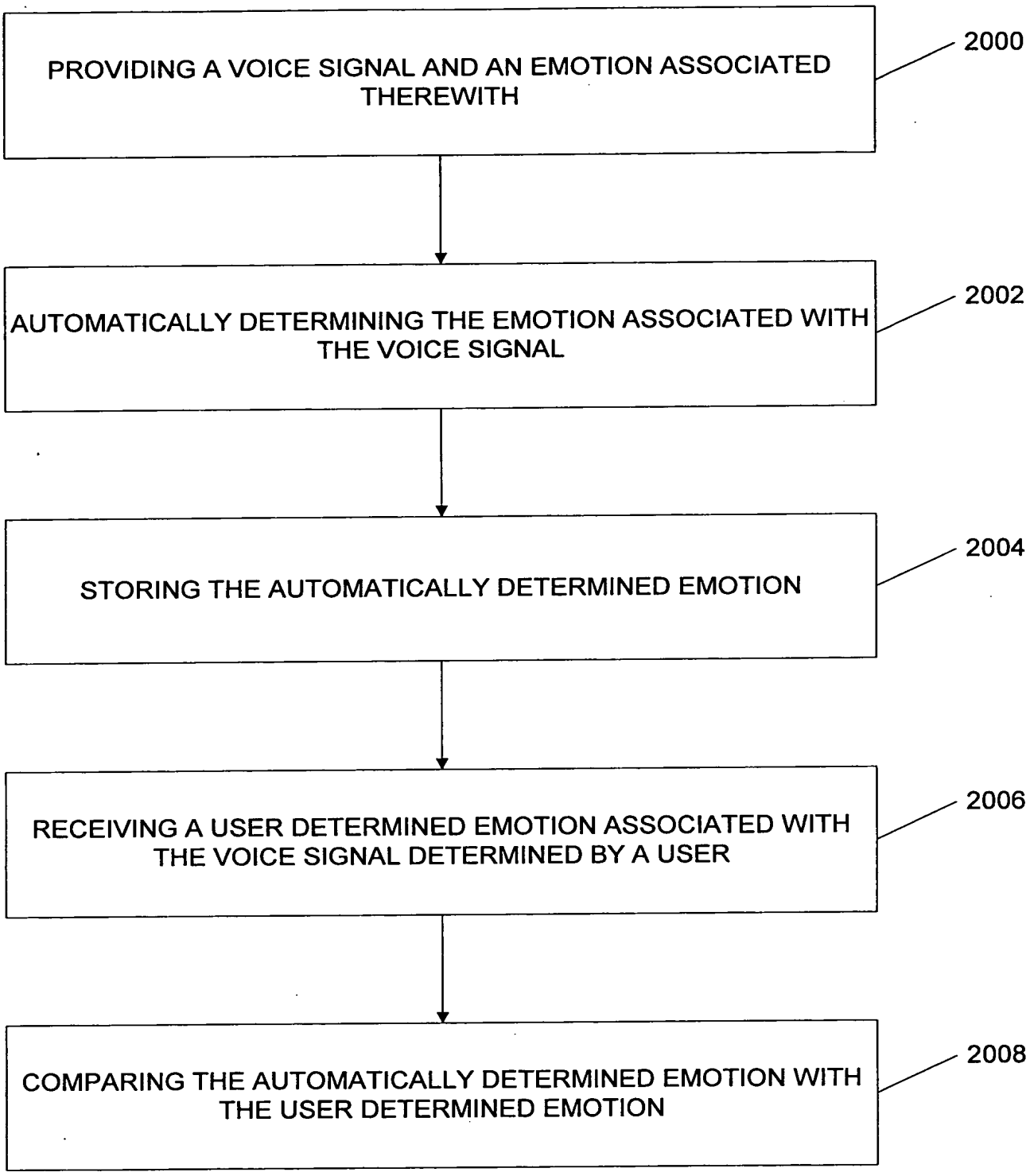

PROVIDING A VOICE SIGNAL AND AN EMOTION ASSOCIATED THEREWITH
2000
AUTOMATICALLY DETERMINING THE EMOTION ASSOCIATED WITH THE VOICE SIGNAL
2002
STORING THE AUTOMATICALLY DETERMINED EMOTION
2004
RECEIVING A USER DETERMINED EMOTION ASSOCIATED WITH THE VOICE SIGNAL DETERMINED BY A USER
2006
COMPARING THE AUTOMATICALLY DETERMINED EMOTION WITH THE USER DETERMINED EMOTION
2008

Figure 20

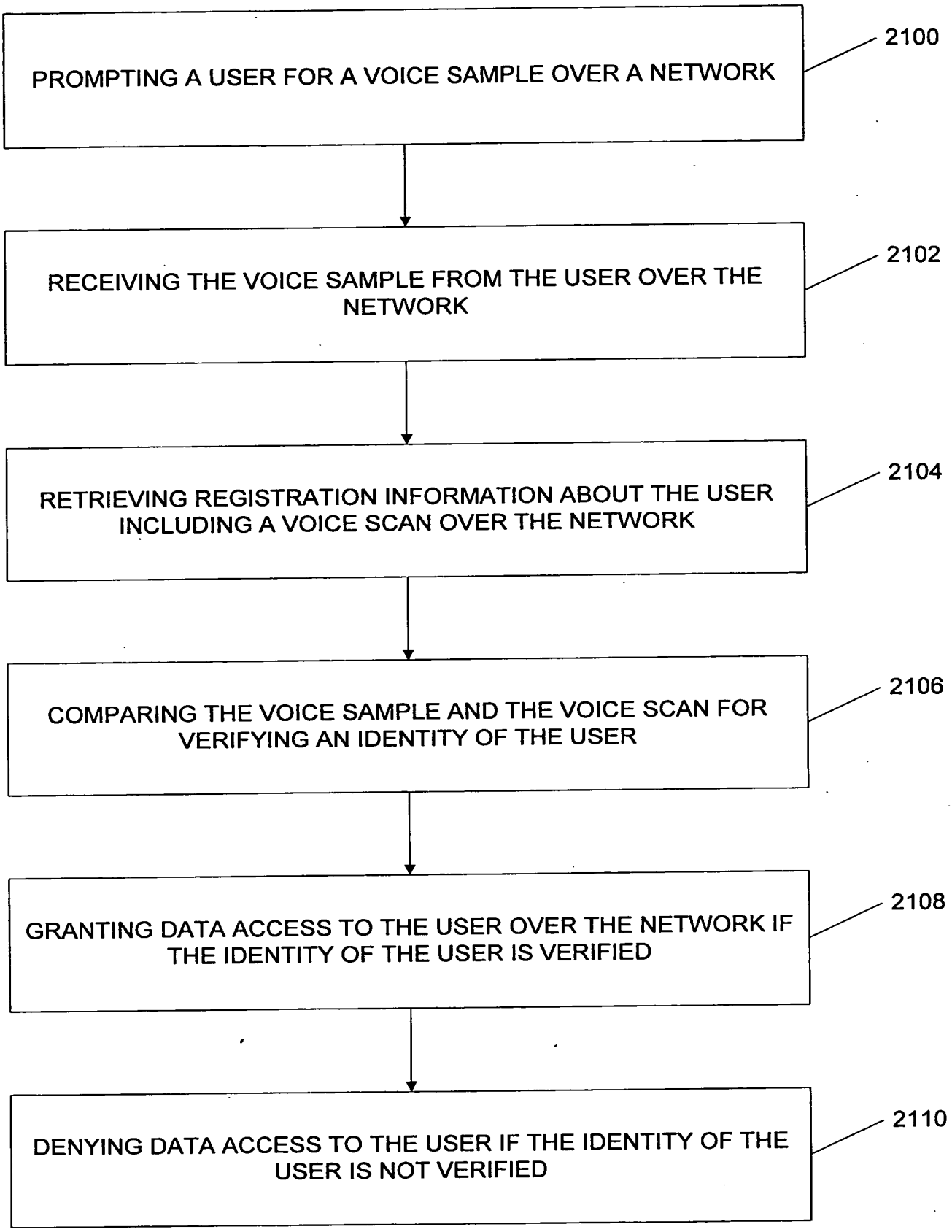

PROMPTING A USER FOR A VOICE SAMPLE OVER A NETWORK
2100
RECEIVING THE VOICE SAMPLE FROM THE USER OVER THE NETWORK
2102
RETRIEVING REGISTRATION INFORMATION ABOUT THE USER INCLUDING A VOICE SCAN OVER THE NETWORK
2104
COMPARING THE VOICE SAMPLE AND THE VOICE SCAN FOR VERIFYING AN IDENTITY OF THE USER
2106
GRANTING DATA ACCESS TO THE USER OVER THE NETWORK IF THE IDENTITY OF THE USER IS VERIFIED
2108
DENYING DATA ACCESS TO THE USER IF THE IDENTITY OF THE USER IS NOT VERIFIED
2110

Figure 21

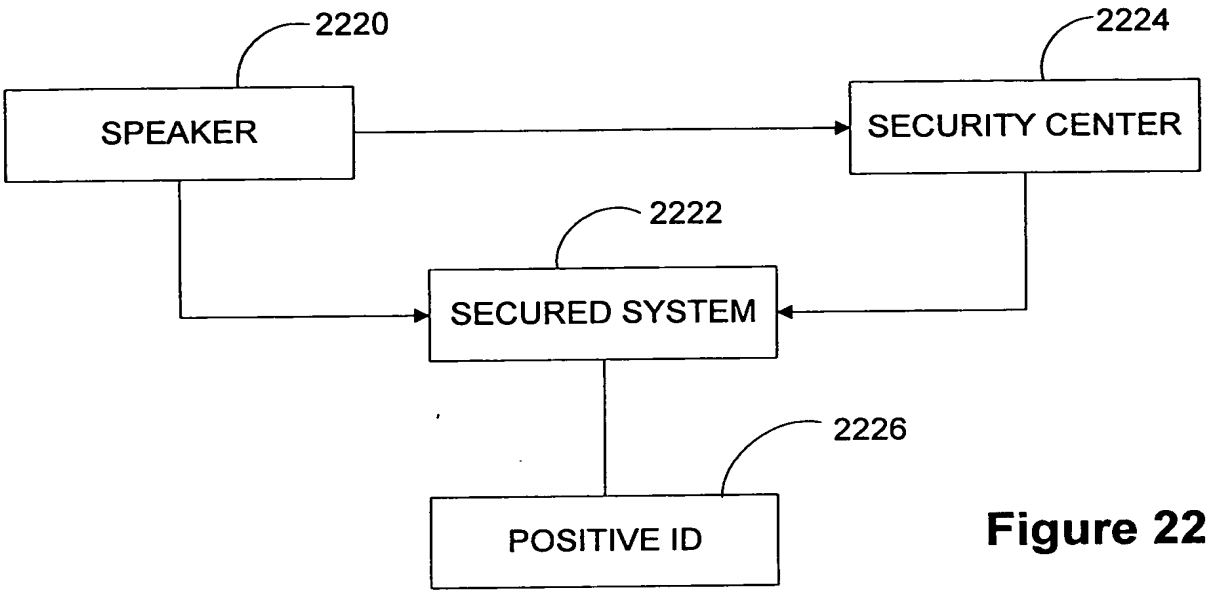


Figure 22

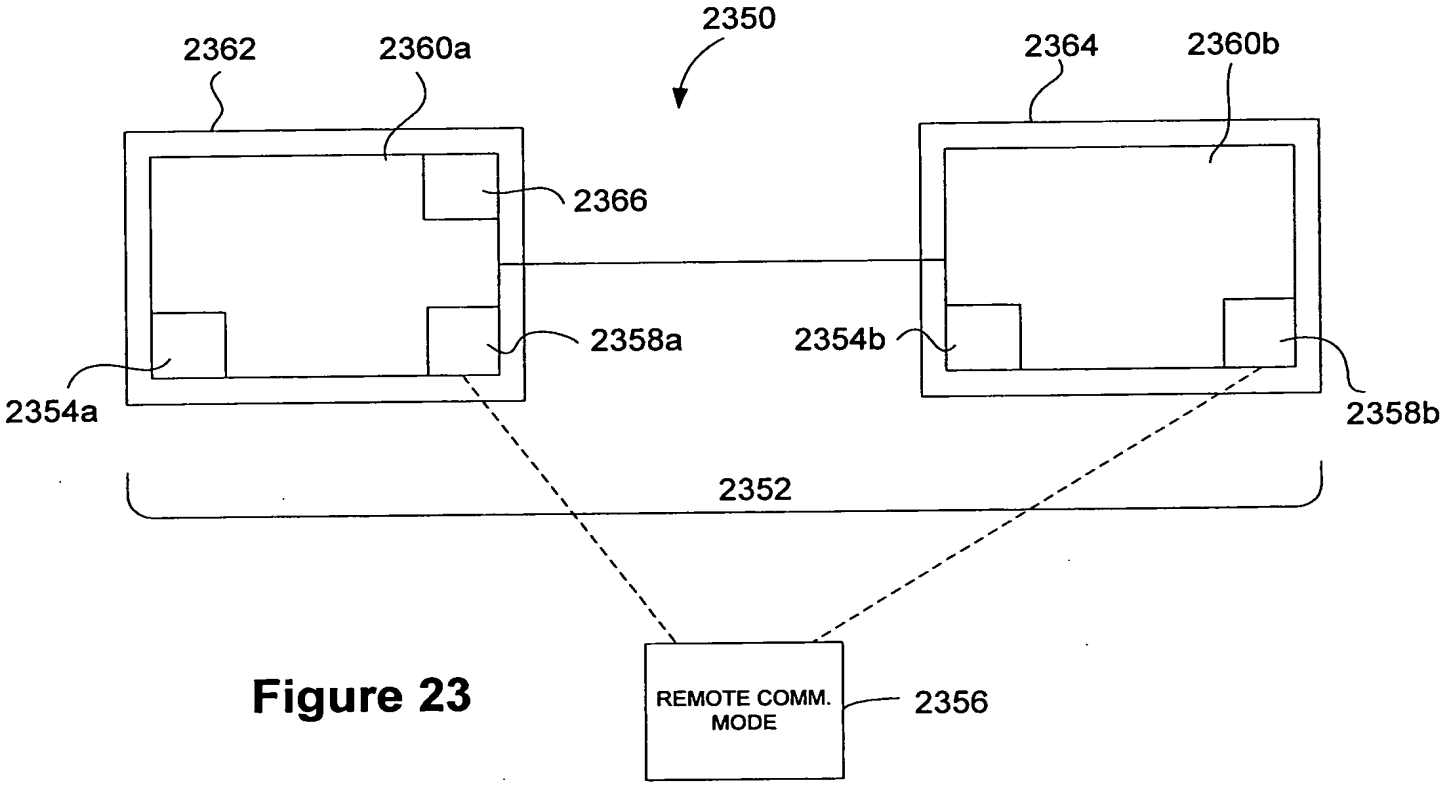


Figure 23

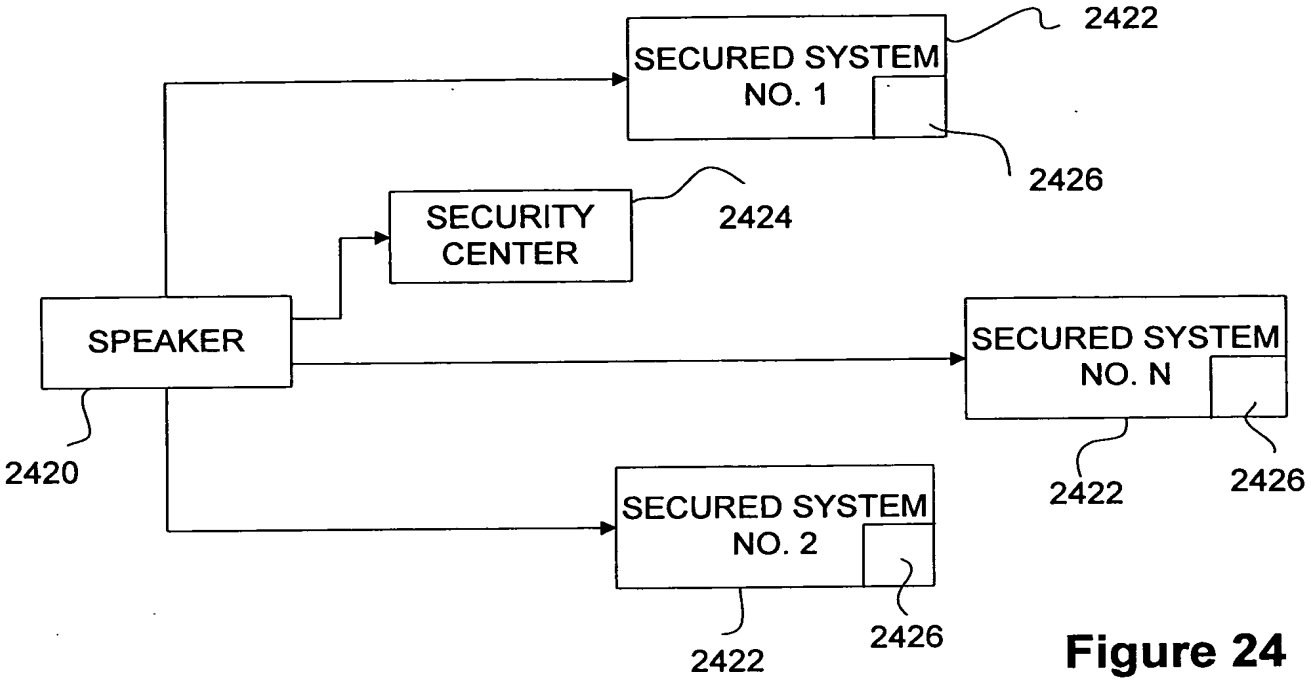


Figure 24

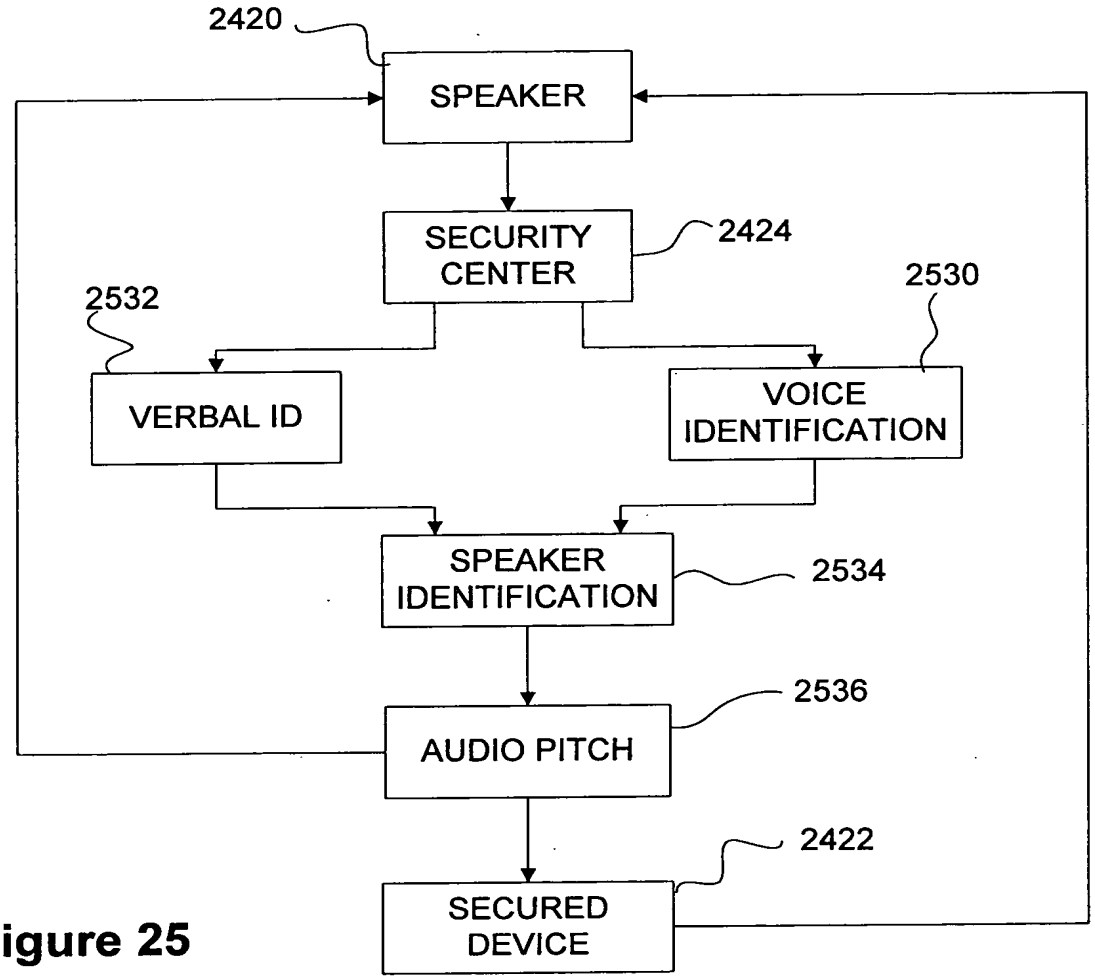


Figure 25

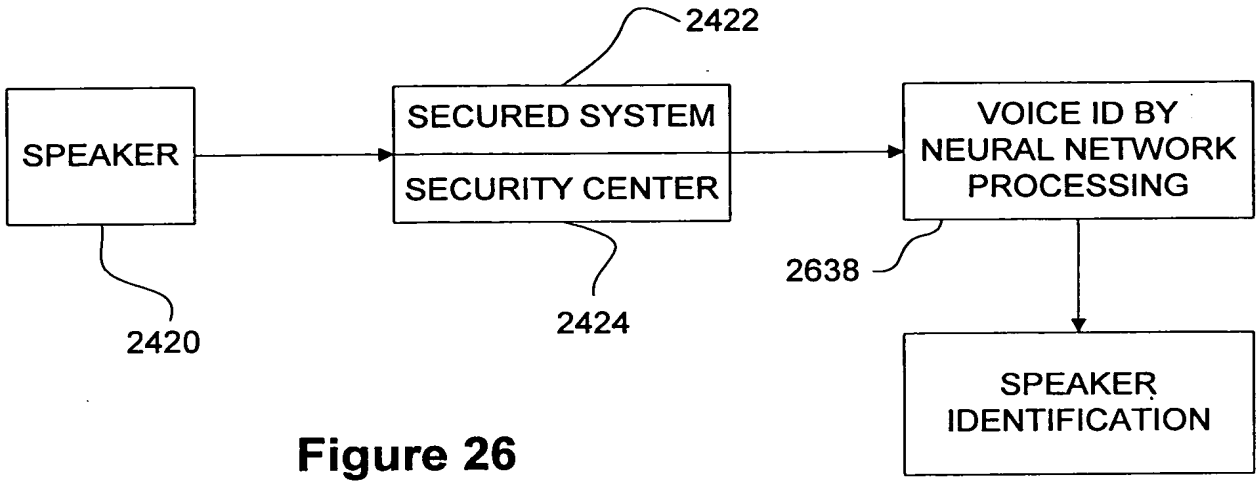


Figure 26

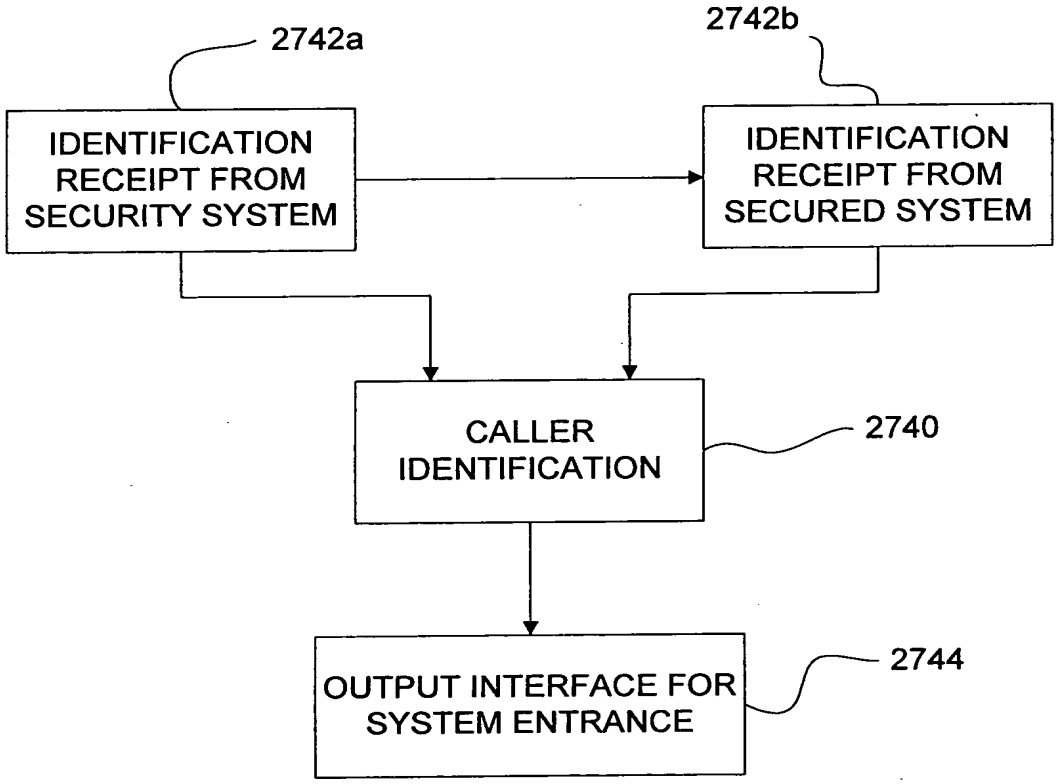


Figure 27

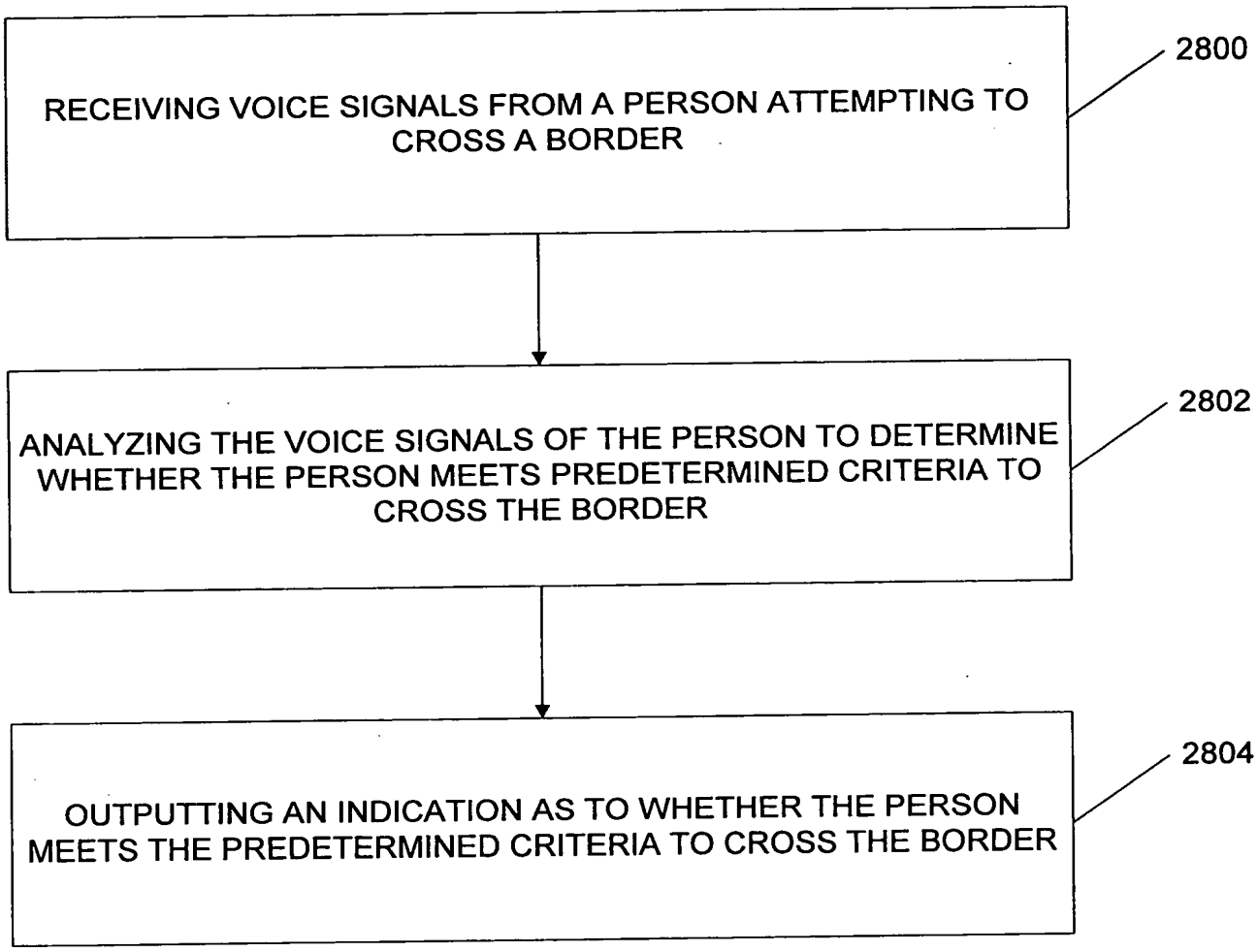

RECEIVING VOICE SIGNALS FROM A PERSON ATTEMPTING TO CROSS A BORDER
2800
ANALYZING THE VOICE SIGNALS OF THE PERSON TO DETERMINE WHETHER THE PERSON MEETS PREDETERMINED CRITERIA TO CROSS THE BORDER
2802
OUTPUTTING AN INDICATION AS TO WHETHER THE PERSON MEETS THE PREDETERMINED CRITERIA TO CROSS THE BORDER
2804

Figure 28

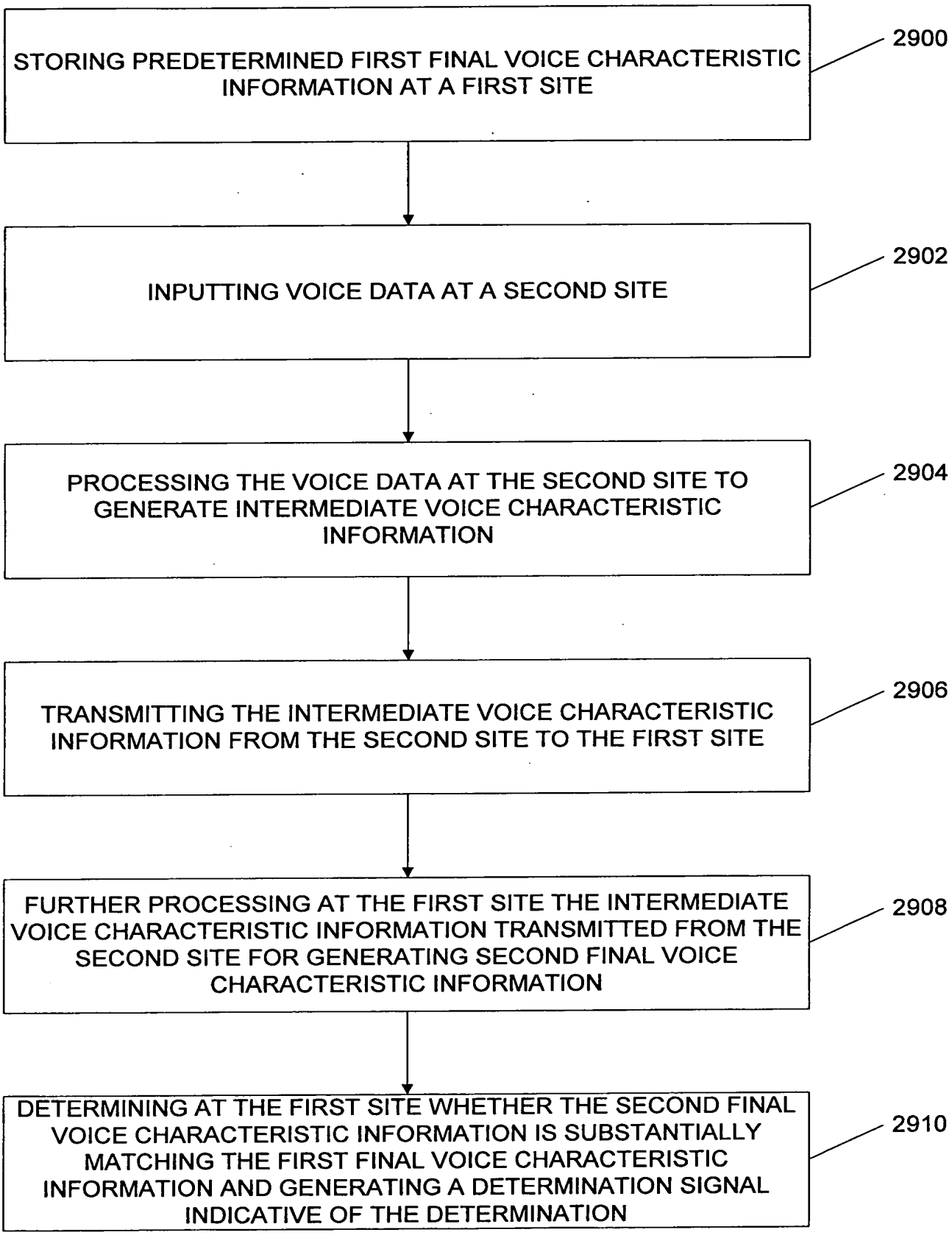

STORING PREDETERMINED FIRST FINAL VOICE CHARACTERISTIC INFORMATION AT A FIRST SITE
2900
INPUTTING VOICE DATA AT A SECOND SITE
2902
PROCESSING THE VOICE DATA AT THE SECOND SITE TO GENERATE INTERMEDIATE VOICE CHARACTERISTIC INFORMATION
2904
TRANSMITTING THE INTERMEDIATE VOICE CHARACTERISTIC INFORMATION FROM THE SECOND SITE TO THE FIRST SITE
2906
FURTHER PROCESSING AT THE FIRST SITE THE INTERMEDIATE VOICE CHARACTERISTIC INFORMATION TRANSMITTED FROM THE SECOND SITE FOR GENERATING SECOND FINAL VOICE CHARACTERISTIC INFORMATION
2908
DETERMINING AT THE FIRST SITE WHETHER THE SECOND FINAL VOICE CHARACTERISTIC INFORMATION IS SUBSTANTIALLY MATCHING THE FIRST FINAL VOICE CHARACTERISTIC INFORMATION AND GENERATING A DETERMINATION SIGNAL INDICATIVE OF THE DETERMINATION
2910

Figure 29

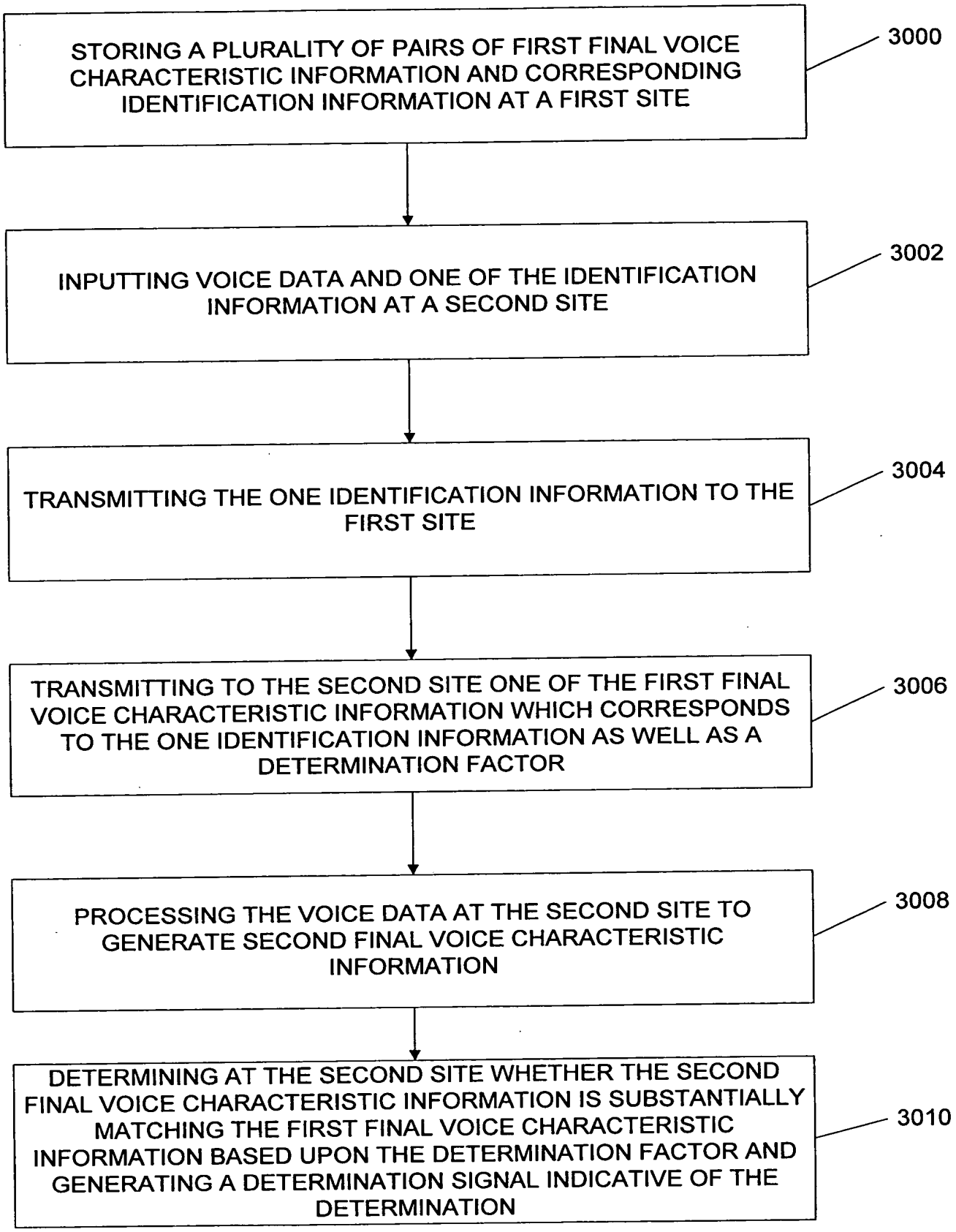

STORING A PLURALITY OF PAIRS OF FIRST FINAL VOICE CHARACTERISTIC INFORMATION AND CORRESPONDING IDENTIFICATION INFORMATION AT A FIRST SITE
3000
INPUTTING VOICE DATA AND ONE OF THE IDENTIFICATION INFORMATION AT A SECOND SITE
3002
TRANSMITTING THE ONE IDENTIFICATION INFORMATION TO THE FIRST SITE
3004
TRANSMITTING TO THE SECOND SITE ONE OF THE FIRST FINAL VOICE CHARACTERISTIC INFORMATION WHICH CORRESPONDS TO THE ONE IDENTIFICATION INFORMATION AS WELL AS A DETERMINATION FACTOR
3006
PROCESSING THE VOICE DATA AT THE SECOND SITE TO GENERATE SECOND FINAL VOICE CHARACTERISTIC INFORMATION
3008
DETERMINING AT THE SECOND SITE WHETHER THE SECOND FINAL VOICE CHARACTERISTIC INFORMATION IS SUBSTANTIALLY MATCHING THE FIRST FINAL VOICE CHARACTERISTIC INFORMATION BASED UPON THE DETERMINATION FACTOR AND GENERATING A DETERMINATION SIGNAL INDICATIVE OF THE DETERMINATION
3010

Figure 30

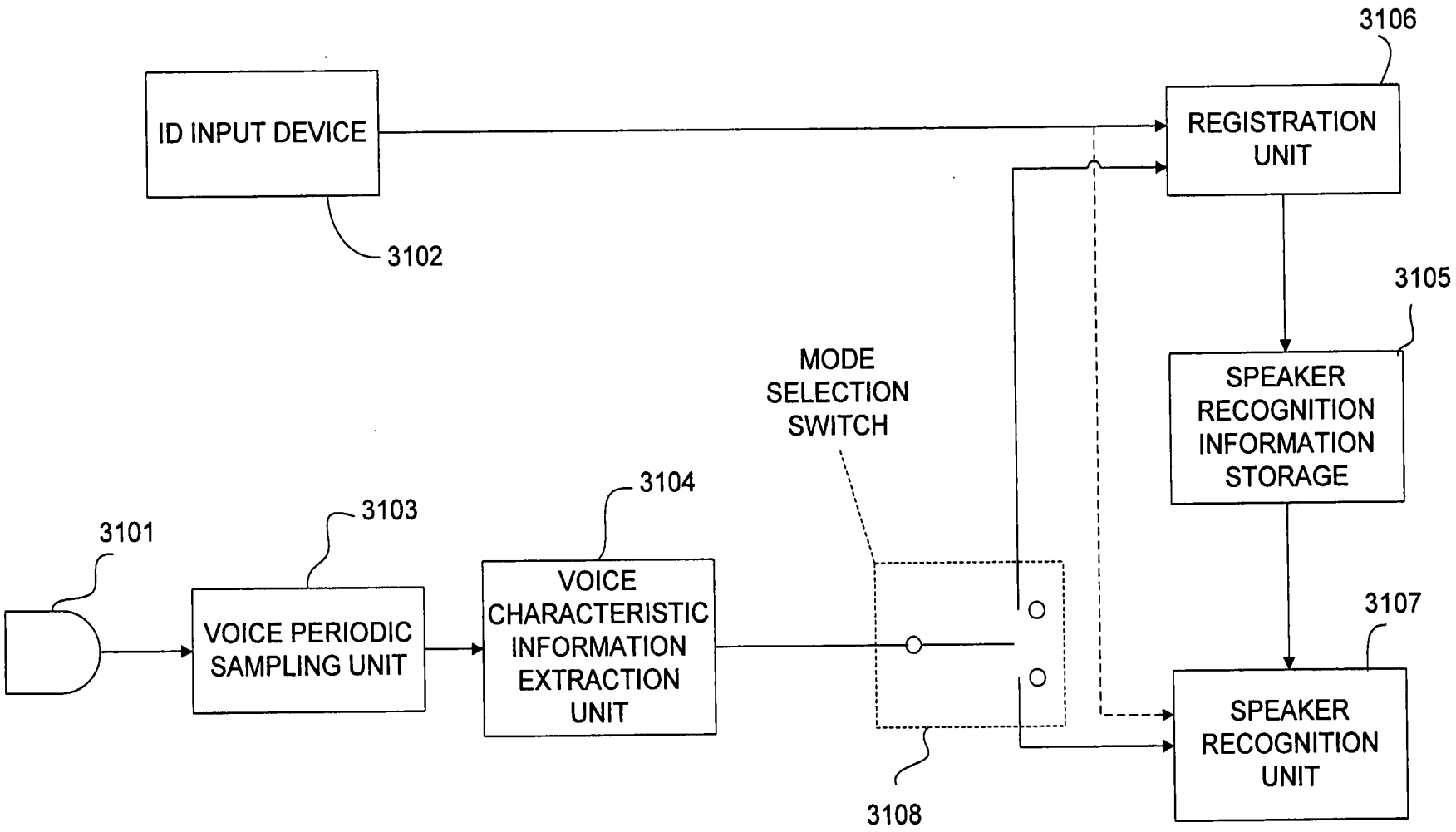


Figure 31

3105

IDENTIFICATION INFORMATION	STANDARD VOICE CHARACTERISTIC INFORMATION
A's ID	A's STANDARD PATTERN
B's ID	B's STANDARD PATTERN
C's ID	C's STANDARD PATTERN
D's ID	D's STANDARD PATTERN
⋮	⋮

Figure 32

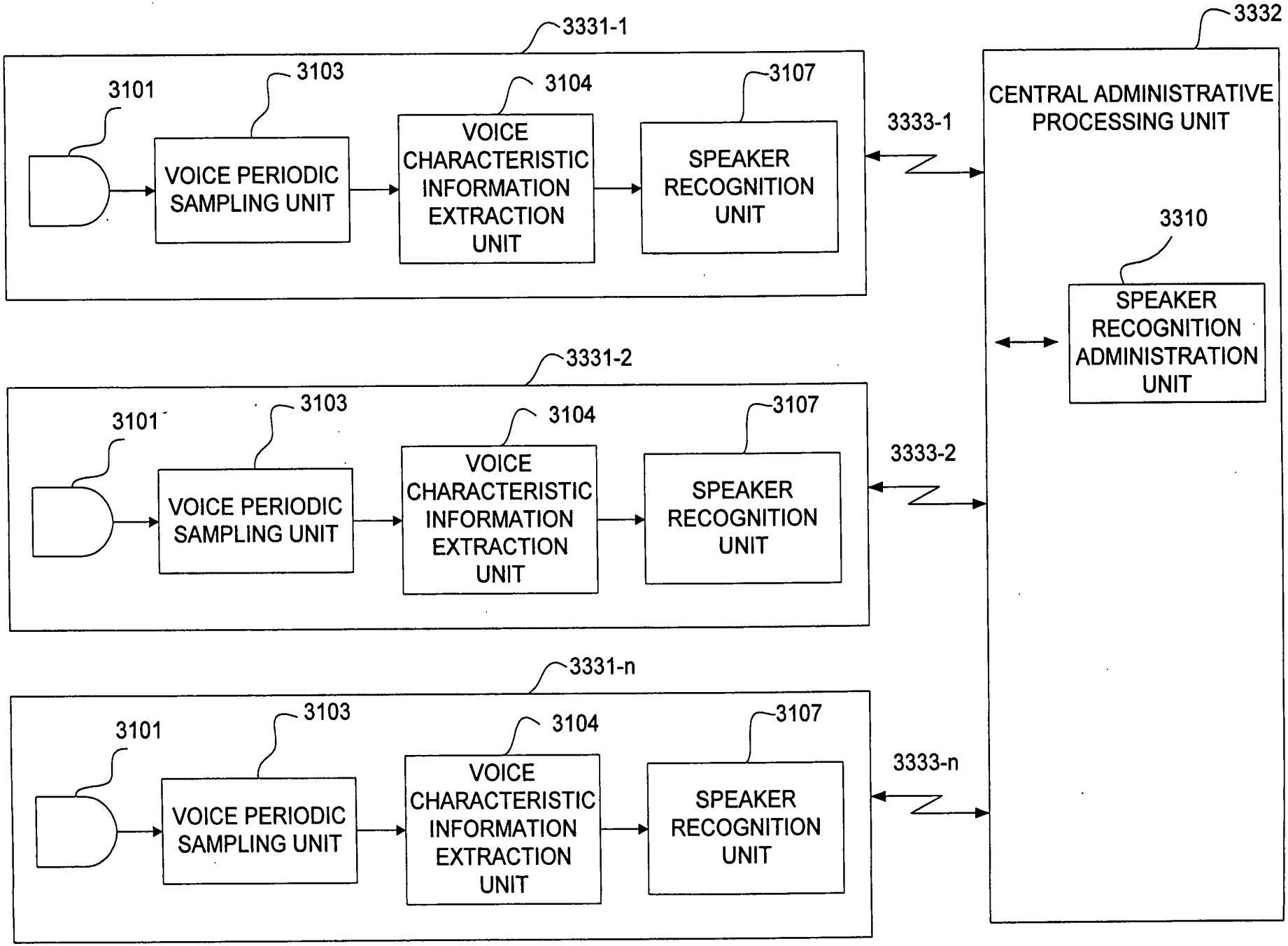

3331-1
3101
3103
3104
3107
VOICE PERIODIC SAMPLING UNIT
VOICE CHARACTERISTIC INFORMATION EXTRACTION UNIT
SPEAKER RECOGNITION UNIT
3333-1
3332
CENTRAL ADMINISTRATIVE PROCESSING UNIT
3310
SPEAKER RECOGNITION ADMINISTRATION UNIT
3331-2
3101
3103
3104
3107
VOICE PERIODIC SAMPLING UNIT
VOICE CHARACTERISTIC INFORMATION EXTRACTION UNIT
SPEAKER RECOGNITION UNIT
3333-2
3331-n
3101
3103
3104
3107
VOICE PERIODIC SAMPLING UNIT
VOICE CHARACTERISTIC INFORMATION EXTRACTION UNIT
SPEAKER RECOGNITION UNIT
3333-n

Figure 33

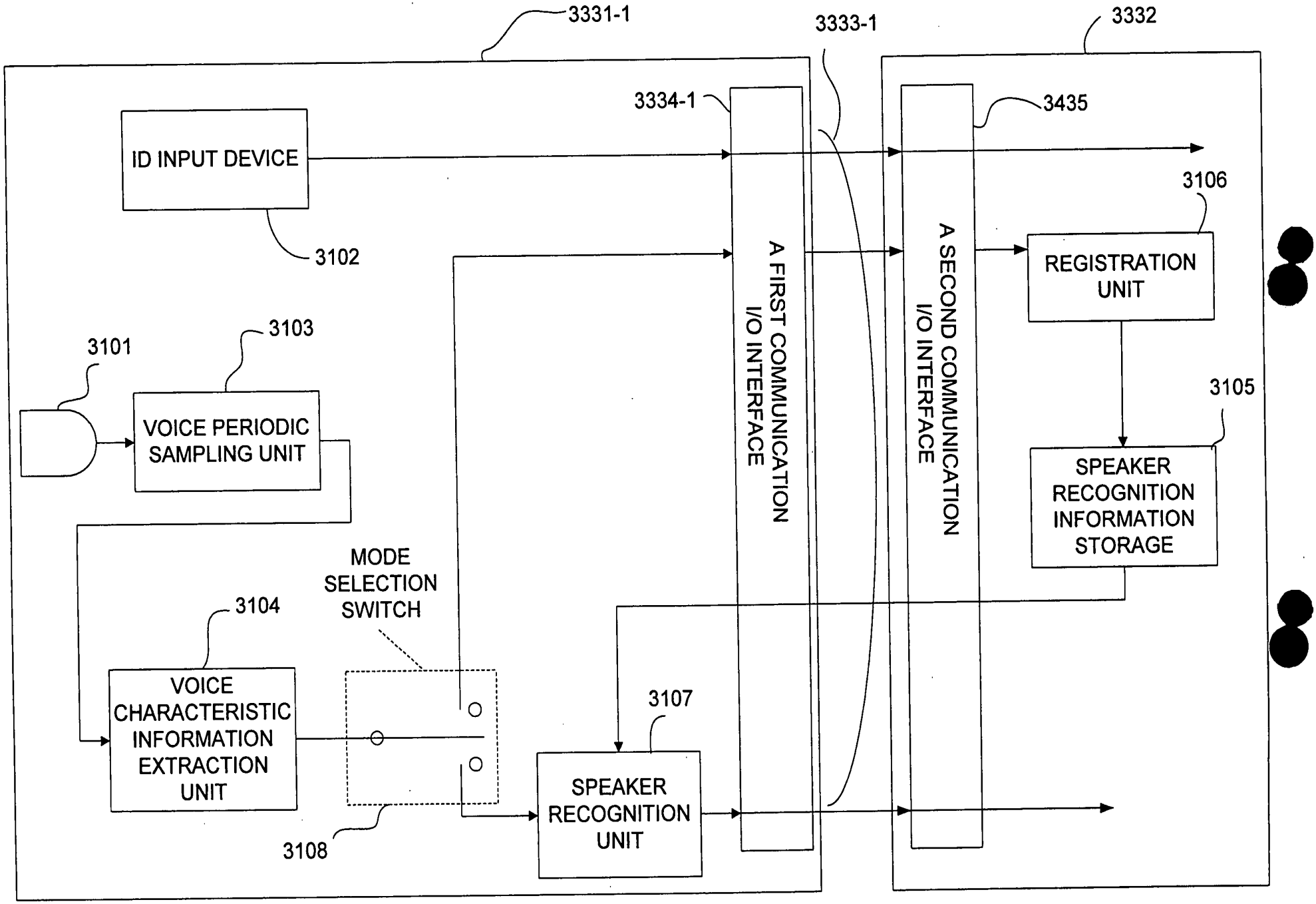

3331-1
3333-1
3332
3334-1
3435
ID INPUT DEVICE
3102
3106
REGISTRATION UNIT
A FIRST COMMUNICATION I/O INTERFACE
A SECOND COMMUNICATION I/O INTERFACE
3101
3103
VOICE PERIODIC SAMPLING UNIT
3105
SPEAKER RECOGNITION INFORMATION STORAGE
MODE SELECTION SWITCH
3104
VOICE CHARACTERISTIC INFORMATION EXTRACTION UNIT
3107
SPEAKER RECOGNITION UNIT
3108

Figure 34

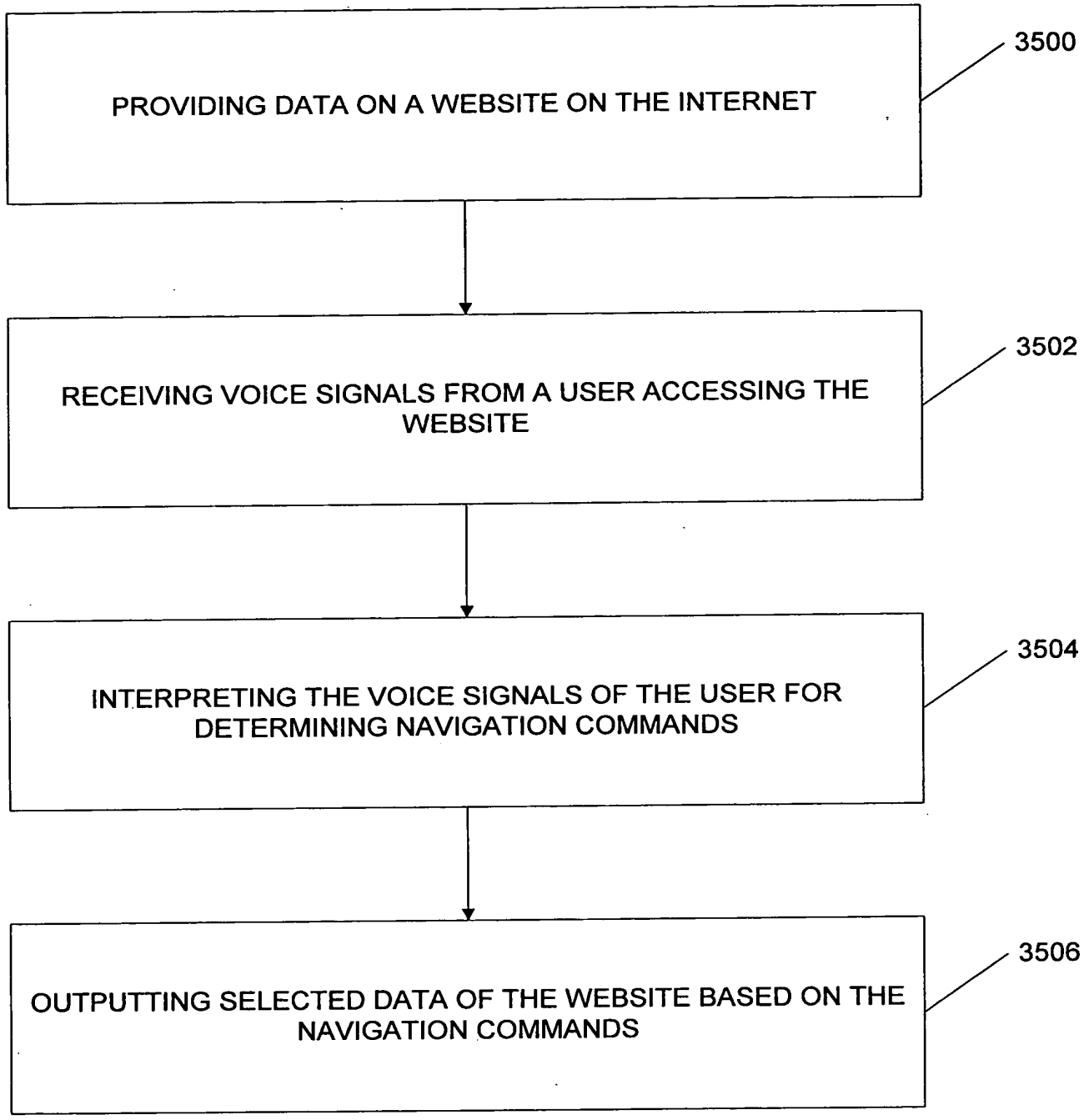

PROVIDING DATA ON A WEBSITE ON THE INTERNET
3500
RECEIVING VOICE SIGNALS FROM A USER ACCESSING THE WEBSITE
3502
INTERPRETING THE VOICE SIGNALS OF THE USER FOR DETERMINING NAVIGATION COMMANDS
3504
OUTPUTTING SELECTED DATA OF THE WEBSITE BASED ON THE NAVIGATION COMMANDS
3506

Figure 35

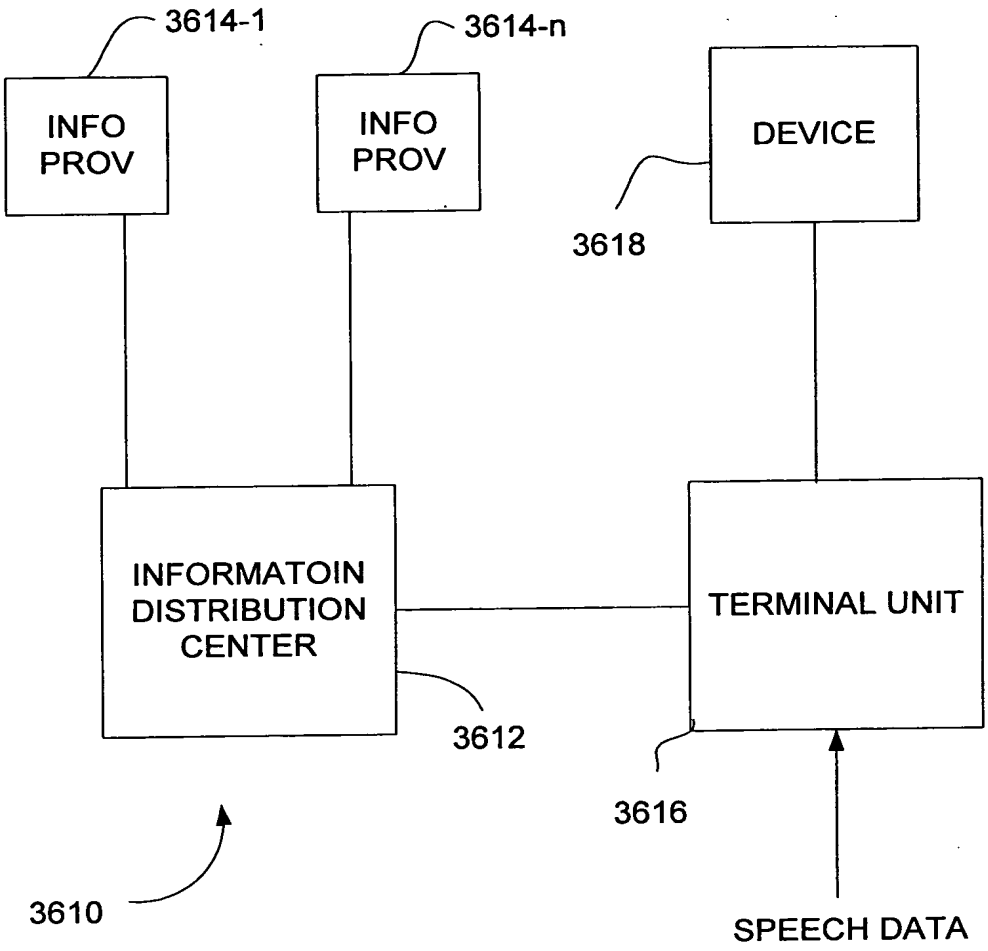

3614-1
3614-n
INFO PROV
INFO PROV
DEVICE
3618
INFORMATOIN DISTRIBUTION CENTER
TERMINAL UNIT
3612
3616
3610
SPEECH DATA

Figure 36

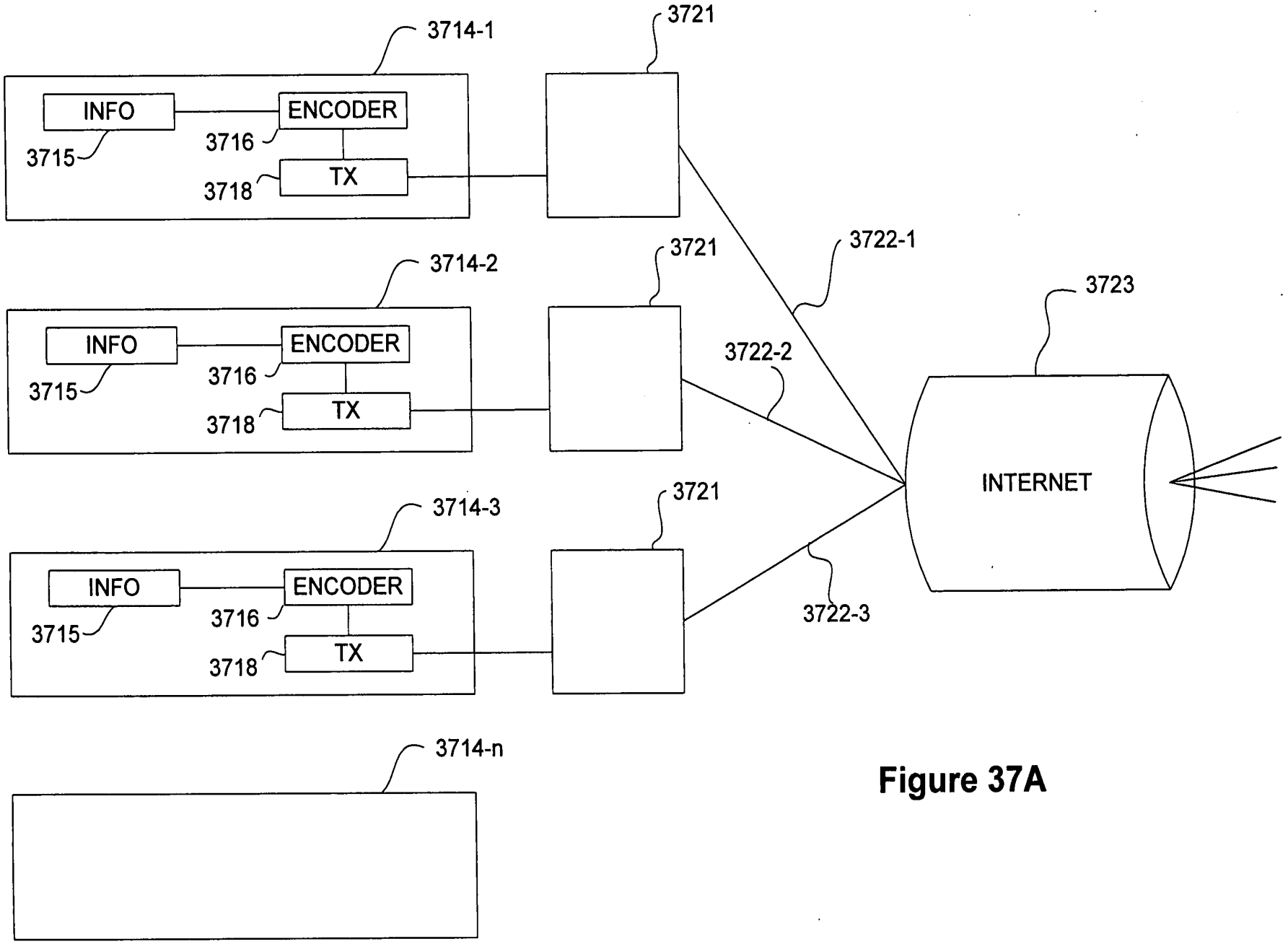

3714-1
3721
INFO
ENCODER
3715
3716
TX
3718
3722-1
3714-2
3721
3723
INFO
ENCODER
3722-2
3715
3716
TX
3718
INTERNET
3714-3
3721
INFO
ENCODER
3716
3715
TX
3718
3722-3
3714-n

Figure 37A

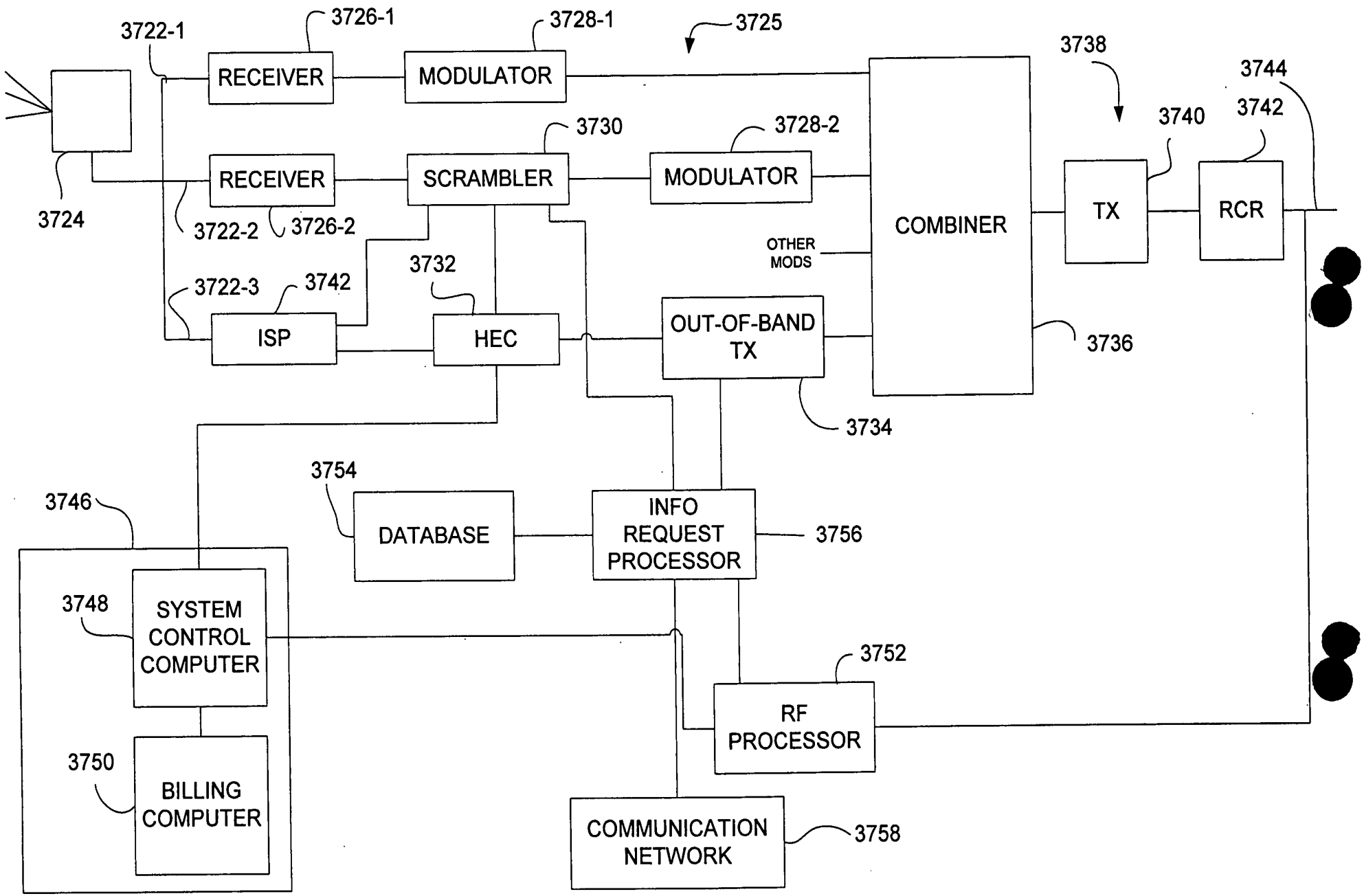

3722-1
3726-1
3728-1
3725
RECEIVER
MODULATOR
3738
3744
3740
3742
3730
3728-2
RECEIVER
SCRAMBLER
MODULATOR
TX
RCR
3724
3722-2
3726-2
OTHER MODS
COMBINER
3732
3722-3
3742
ISP
HEC
OUT-OF-BAND TX
3736
3734
3754
3746
DATABASE
INFO REQUEST PROCESSOR
3756
3748
SYSTEM CONTROL COMPUTER
3752
RF PROCESSOR
3750
BILLING COMPUTER
COMMUNICATION NETWORK
3758

Figure 37B

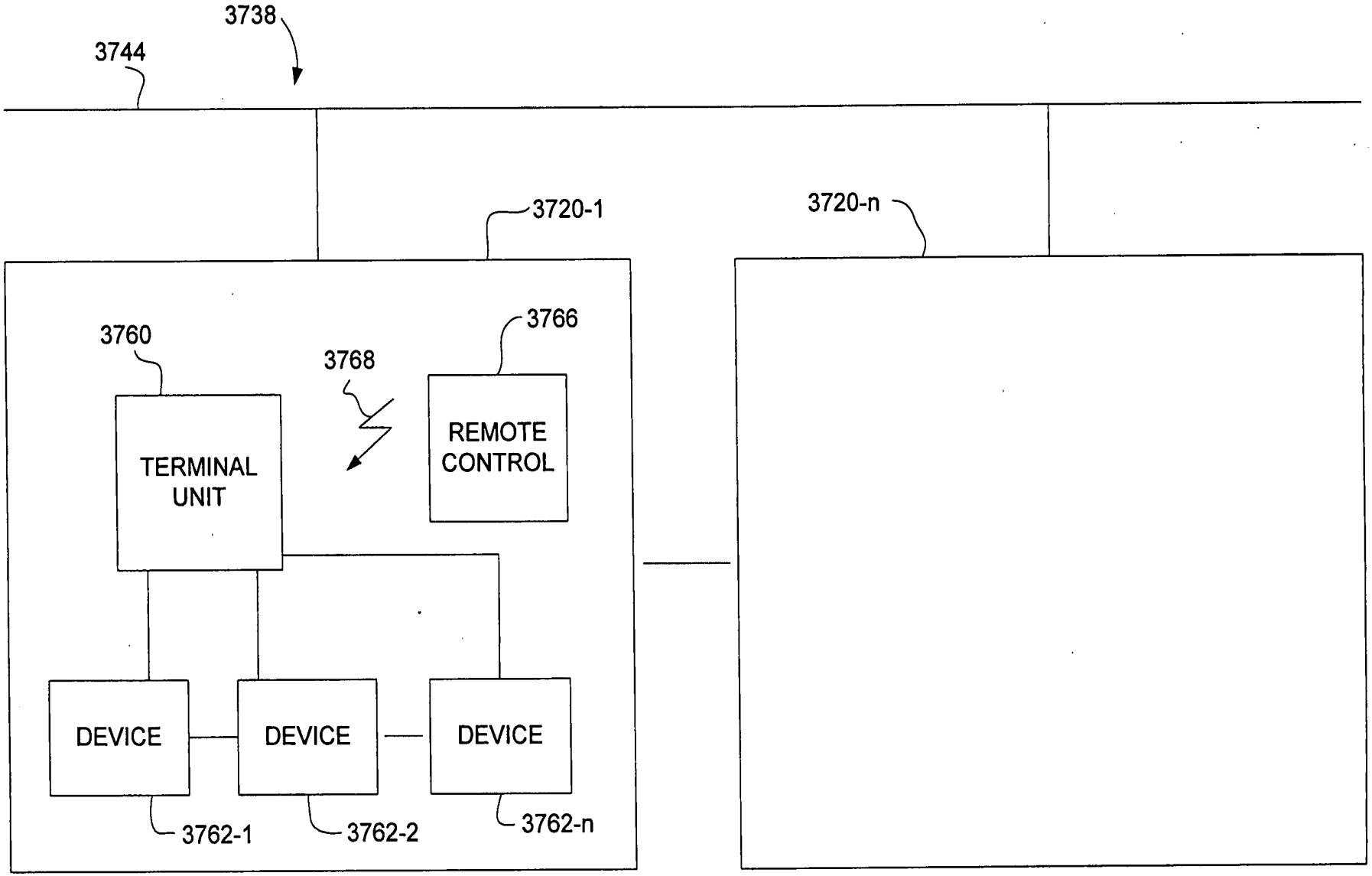

3738
3744
3720-1
3720-n
3760
3768
3766
TERMINAL UNIT
REMOTE CONTROL
DEVICE
DEVICE
DEVICE
3762-1
3762-2
3762-n

Figure 37C

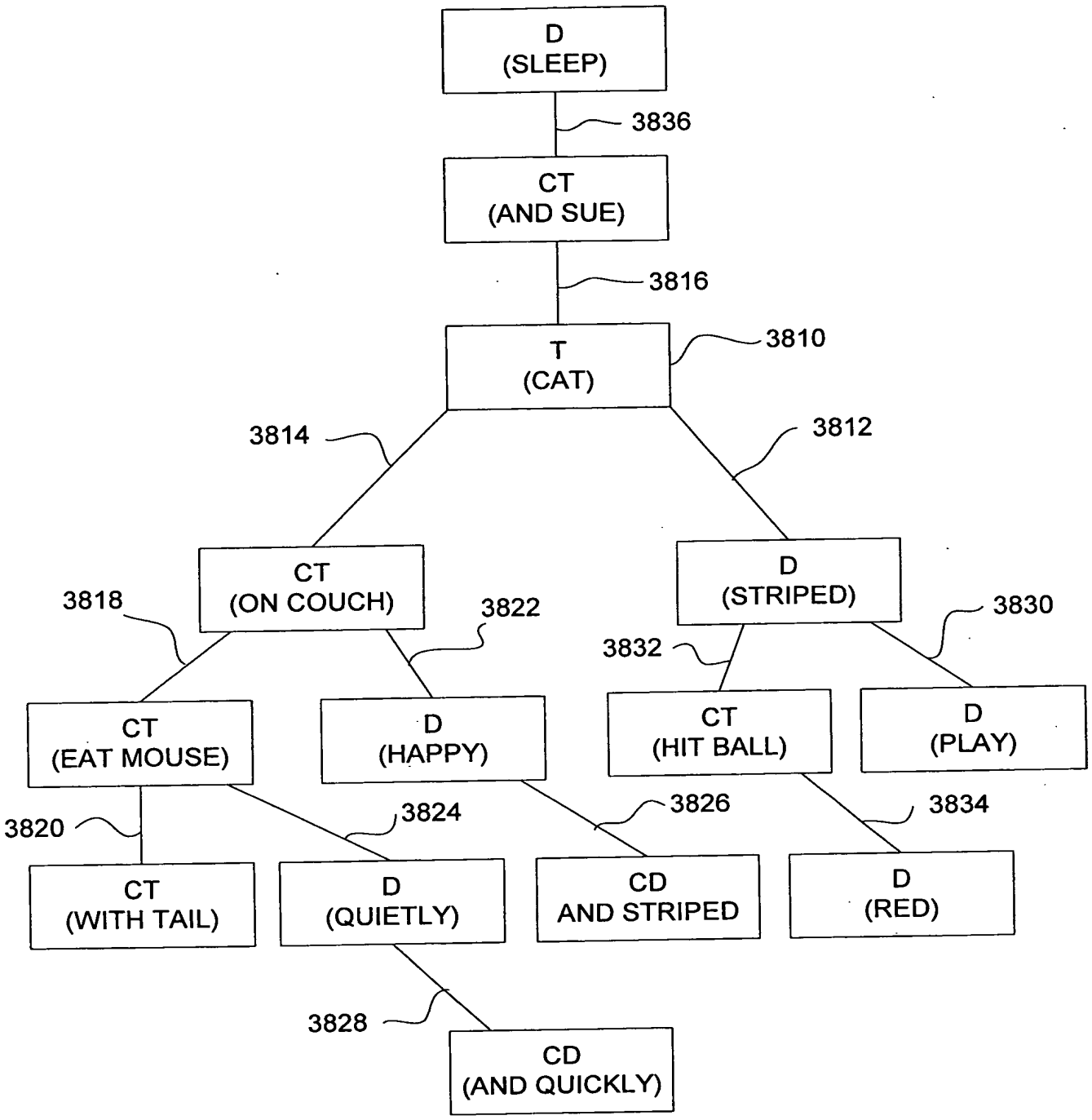
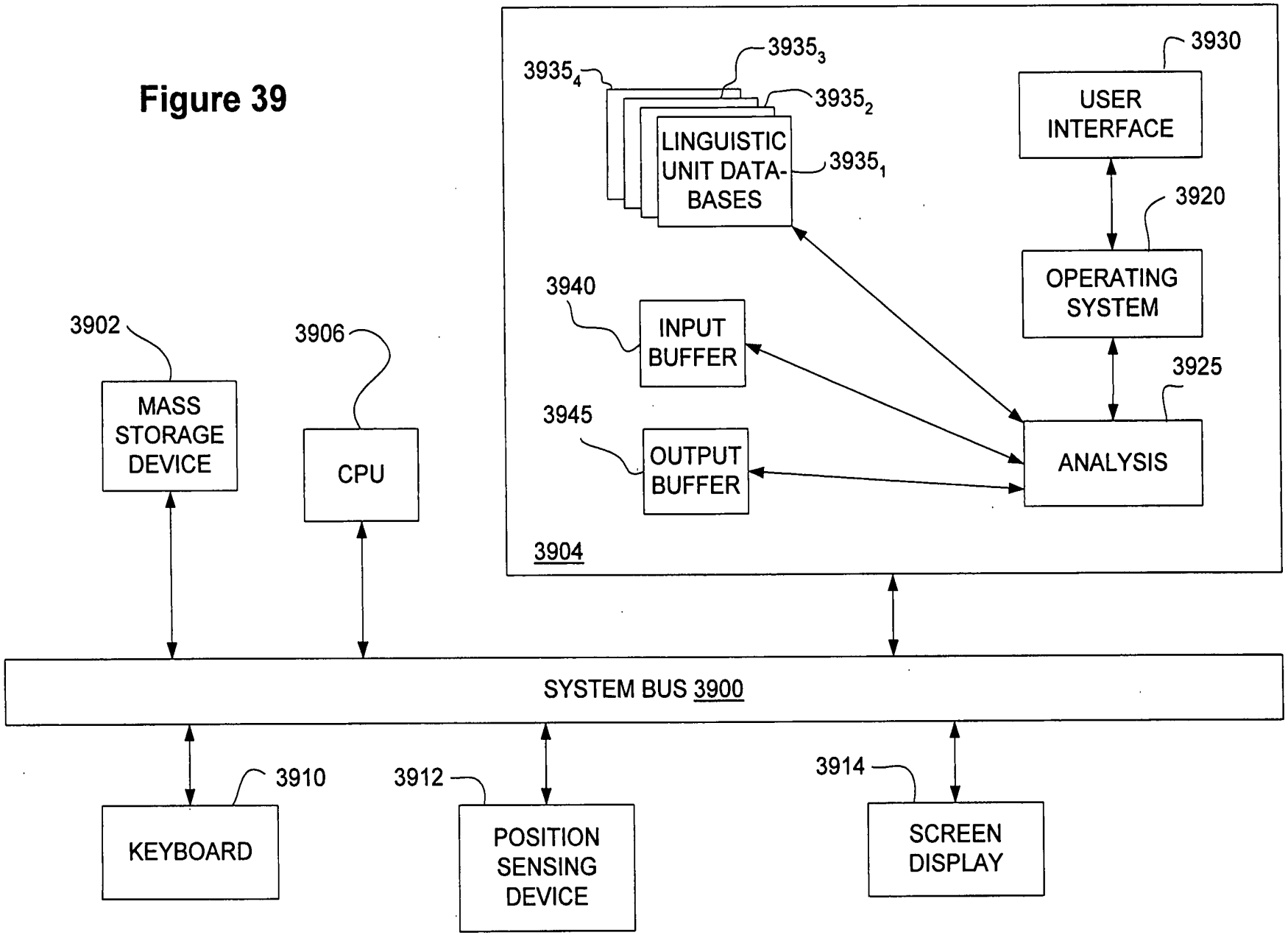

D
(SLEEP)
3836
CT
(AND SUE)
3816
T
(CAT)
3810
3814
3812
CT
(ON COUCH)
D
(STRIPED)
3818
3822
3832
3830
CT
(EAT MOUSE)
D
(HAPPY)
CT
(HIT BALL)
D
(PLAY)
3820
3824
3826
3834
CT
(WITH TAIL)
D
(QUIETLY)
CD
AND STRIPED
D
(RED)
3828
CD
(AND QUICKLY)

Figure 38

Figure 39


3935$_3$
3935$_4$
3935$_2$
3935$_1$
LINGUISTIC UNIT DATA-BASES
3930
USER INTERFACE
3920
OPERATING SYSTEM
3940
INPUT BUFFER
3945
OUTPUT BUFFER
3925
ANALYSIS
3904
3902
MASS STORAGE DEVICE
3906
CPU
SYSTEM BUS 3900
3910
KEYBOARD
3912
POSITION SENSING DEVICE
3914
SCREEN DISPLAY